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1 IN THE UNITED STATES DISTRICT COURT
 FOR THE NORTHERN DISTRICT OF OHIO
2 EASTERN DIVISION
3 LOCAL 17 INTERNATIONAL ASSOC. OF)
 BRIDGE & IRON WORKERS INS. FUND,)
4)
 Plaintiff,)
5) Civil
Action No.)
 vs.)
1:97CV1422)
6)
 PHILIP MORRIS, INC, ET AL,) Akron,
Ohio)
7)
 Defendants.) VOLUME
6)
8 - - -
 TRANSCRIPT OF JURY TRIAL HAD BEFORE
9 THE HONORABLE JAMES S. GWIN, JUDGE
 OF SAID COURT, ON MONDAY, MARCH 1,
1999
10 AT 8:00 O'CLOCK A.M.
 - - -
11 APPEARANCES:
 For Plaintiffs: PATRICK J. COUGHLIN, ESQ.
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 GEORGE LOMBARDI, ESQ.
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 GREGORY L. FOWLER,

ESQ.
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8 For RJR Nabisco, Inc,: ROBERT C. WEBER, ESQ.
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1 (The following proceedings were
conducted
2 outside the presence of the jury:)
3 THE COURT: I'm sure you have some
questions,
4 it's come to our attention you may be a
beneficiary under
5 this, and I think there had been some
discussion, but we
6 had thought that the fund you were attached
with wasn't
7 a part of this case, and --
8 JUROR NUMBER 12: I don't think it
is but.
9 THE COURT: It may be.
10 JUROR NUMBER 12: Okay.
11 THE COURT: Let me ask, I release
you from the
12 earlier instructions, but I think I would
strongly
13 encourage you without ordering you not to talk
about the
14 case or your impressions.

15 JUROR NUMBER 12: I won't.
16 THE COURT: When we have a verdict,
you are
17 free to talk to whoever you wish. But don't
engage in it.
18 Sometimes attorneys want to investigate it or
people want
19 to pick your brain or what your interim
impressions were,
20 but you agreed with us you wouldn't reach an
opinion until
21 all the evidence was in. Your earlier
impressions would
22 be subject to change. I think it is for your
benefit and
23 our benefit. It is best you stay away from
having any
24 conversations with either family members or
friends or
25 anybody else.

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1 JUROR NUMBER 12: Okay.
2 THE COURT: Thanks for being with
us. I
3 apologize for not understanding this earlier,
because we
4 wouldn't have -- not wanted to inconvenience
you in terms
5 of spending the week. You know more about
smoking now
6 than you ever wished.
7 JUROR NUMBER 12: That's true;
that's true.
8 THE COURT: Thanks a lot.
9 MR. WEBER: Thank you.
10 THE COURT: Could you have him get
his stuff.
11 I would rather him not go back with the other
jurors until
12 we bring them in.
13 JUROR NUMBER 12: My coat is the
only thing in
14 there.
15 (The jury was returned to the
courtroom and the
16 following proceedings were conducted in open
court:)
17 THE COURT: If the jury will please
be seated.
18 I would just indicate to the jury that I
excused juror
19 number 12. After some further review, the
court learned
20 that he was actually one of the beneficiaries
of one of
21 the funds that is involved in this litigation.
We had not
22 thought that to be true originally, but after
some further
23 checking we found that out. And for that
reason, I've
24 excused juror number 12. Which just allows me

an
25 opportunity to reiterate. We have invested a
lot of time
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1 at this point in this case, it is moving along.
It's
2 absolutely incumbent upon everyone of you to
make sure you
3 are here every day. We'll go forward now with
11 jurors,
4 but it's very, very important that each of you
continue to
5 be as diligent as you have in terms of
reporting for
6 service each morning. So, I extend the thanks
to you for
7 the service you have given so far, but
reiterate the
8 importance of you getting here every day. So,
I will at
9 this point in time call upon the plaintiff to
call your
10 next witness.
11 MR. COUGHLIN: Your Honor, we would
call Dr.
12 Neal Benowitz. Good morning ladies and
gentlemen.
13 NEAL BENOWITZ
14 called as a witness by and on behalf of the
Plaintiff,
15 being first duly sworn, was examined and
testified as
16 follows:
17 THE COURT: Good morning.
18 THE WITNESS: Good morning.
19 THE COURT: If you would help us by
stating
20 your name and spelling your last name for the
court
21 reporter.
22 THE WITNESS: It's Neal Benowitz.
N-E-A-L,
23 B-E-N-O-W-I-T-Z.
24 THE COURT: Mr. Coughlin.
25 - - -

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1 DIRECT EXAMINATION
2 BY MR. COUGHLIN:
3 Q. Good morning, Dr. Benowitz?
4 A. Good morning.
5 Q. Dr. Benowitz, you understand you are here
to talk
6 about how nicotine controls smoking behavior and
how the
7 tobacco industry optimized the cigarette design
to insure
8 the optimal delivery device of nicotine?
9 A. Yes.
10 Q. Dr. Benowitz, each of the cigarette
companies in this
11 case has asserted whether to smoke or not is the

free

12 choice and will. Have you ever heard those
assertions?

13 A. I have.

14 Q. Do you have an opinion about that?

15 A. Yes.

16 Q. And what's that opinion?

17 A. The question of free will is complex.

It's a yes and

18 no answer.

19 The yes part of it is that smokers'
brains work

20 perfectly well, nicotine does not have any
impairment on

21 thinking or on making decisions. Smokers make
valid

22 decisions about all aspects of their life,
except when

23 dealing with smoking.

24 Therefore the reason is, when a
person makes a

25 decision it's influenced by many factors, all
decisions

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1 are. If a person is deciding about smoking,
the decision

2 is made on reasons to stop smoking, which may
be health

3 concerns for one's self, health concerns for
one's

4 children, the fact that one's family wants you
to stop

5 smoking, the cost of smoking. So, those are
some of the

6 factors that weigh for a person to stop.

7 The factor that weighs to keep a
person smoking

8 is nicotine addiction. It's that when they
quit smoking,

9 their lives are often disrupted, they can't
think right,

10 they can't concentrate, can't focus, become
irritable,

11 have trouble with the job, don't feel good,
have trouble

12 finding pleasure in lots of things in one's
life.

13 Don't -- have problems dealing with stress.

14 A number of things occur in many
smokers that

15 makes the quitting process extremely
uncomfortable and

16 really impairs their functioning, and smokers
learn that,

17 and that becomes a very strong factor in the
balance of

18 whether to smoke or not.

19 One can look at two aspects of the
free will

20 choice that I think illustrates this for
smoking. One is

21 whether a person's decisions are internally

consistent.

22 Normally, you expect a person to make one
decision and
23 then other decisions that are consistent with
one another.
24 One of the things that is well known
is that
25 many smokers, 70 percent of smokers would like
not to

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1 smoke. 35 percent of smokers make a serious
quit attempt
2 each year, they quit for at least a day trying
to stop
3 smoking. Only one in ten succeed.
4 The average smoker, when they do
quit, has
5 tried four, five times and has failed.
6 One obvious question is, what is it
that makes
7 a person want to quit, to try to quit many
times, and have
8 such a low success rate and fail many times,
often taking
9 years to quit when their stated desire is they
don't want
10 to smoke. I don't think that's just from the
flavor of
11 cigarettes. It's because people are addicted
to nicotine.
12 A second way of looking at it has to
do with

13 behaving in a way that's not self-destructive.
Most
14 people, unless they are suicidal, will not do
things that
15 they know will hurt them. In the case of
cigarette
16 smoking, most smokers know that cigarette
smoking is
17 harmful to health.
18 Many smokers have been told by
doctors that
19 they should stop smoking. Even if one looks at
the
20 extreme situation of people who have had
smoking related
21 diseases like heart attacks where doctors say
smoking is
22 the worst thing for you, it's going to double
or quadruple
23 your chance of dying in the near future, 50
percent of
24 smokers keep on smoking in spite of that
advice.
25 These smokers who keep on smoking in
spite of

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1 health problems are not suicidal people. They
are not
2 generally self destructive. The only

self-destructive

3 thing they do is smoke cigarettes. That is not
motivated
4 by someone liking the flavor of cigarettes,
that is
5 motivated by nicotine addiction.

6 Finally, my practice is cardiology.
And one
7 patient of mine, which I think is a very good
example of
8 this, is a man in his 50's who has been a heavy
smoker his
9 whole life. He has high blood pressure, high
cholesterol,
10 he's had a heart attack, he's had bypass
surgery, and
11 continues to have chest pain in spite of
smoking
12 cigarettes.

13 I say you have to stop smoking. It
is going to
14 kill you. He tells me I know that, but I can't
stop. If
15 I don't have cigarettes, I can't think, I can't
function,
16 I don't feel good. If I can't smoke
cigarettes, I don't
17 care if I live or if I die.

18 This is a man who's not suicidal,
but the
19 decision, free choice decision is so influenced
by
20 dependence he would choose dying over living.

21 Q. Thank you, doctor. You started to tell us
what you

22 did in your practice. What is your practice?
23 A. Well, I'm on the faculty at the University
of
24 California, San Francisco. I teach internal
medicine. I
25 spend about a third of my time in patient care,
most of it

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clinical
1 is internal medicine or cardiology. I also do
with drug
2 pharmacology and toxicology, which has to do
3 issues.

4 I spend a fair chunk of my time
involved in
5 hospital affairs, involved in drug use
policies, not drug
6 abuse, but actually pharmaceutical drugs and
teaching.

7 And I spend a fair amount of time in research.
And most
8 of my research for the past 25 years has been
on the
9 question of what nicotine does to people, how
nicotine
10 influences cigarette smoking, and smoking
related

11 diseases.
12 Q. Have you received any honors or awards?
13 A. Yes, the two awards which I'm most proud,
one was the
14 Ovay Fairno Award which is an international
award given for
15 distinction in research on nicotine, tobacco and
health.
16 And I received that award two or three years
ago. And then
17 the second award was the Alton Oxner Award.
Alton Oxner
18 was the surgeon who started the Oxner Clinic in
New
19 Orleans. And every year an award is given for
20 contributions to understanding smoking and
health. And I
21 received that award about two years ago.
22 Q. And do you lecture at the Mayo Clinic?
23 A. I also received an award at the Mayo
Clinic. They
24 have a distinguished scientist lecture each
year, and I
25 gave that lecture three years ago, talking about
my
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1 research on nicotine, tobacco and health.
2 Q. Are you a member of any professional
organization?
3 A. Yes, a number of organizations, probably 6
or 8,
4 dealing with various aspects of internal
medicine,
5 pharmacology, and in nicotine and tobacco there
is an
6 organization, the Society for Research on
Nicotine and
7 Tobacco, I was President of that society a
couple years
8 ago.
9 Q. Have you been involved in drafting any of
the Surgeon
10 General reports?
11 A. Yes, I've participated in quite a few of
the reports.
12 I was one of the senior scientific editors of
the 1988
13 Surgeon General's report on nicotine addiction.
14 Q. And that specifically dealt with nicotine
and its
15 addictive properties, is that right?
16 A. That's correct.
17 Q. And as senior editor what were your
responsibilities
18 there?
19 A. Well, the Surgeon General's report is a
document that
20 tries to assemble all the existing scientific
information
21 about one topic in smoking and health. The
topic is chosen
22 by the Surgeon General, and then there is a

senior
23 scientific editor or editors who work with the
director of
24 the office of smoking and health, to either
write or ask
25 other experts to write different sections of a
compendium

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1 on a topic.
2 In our case it was what nicotine did
to the
3 brain, how nicotine maintains smoking behavior,
and
4 aspects of treating nicotine addiction. As a
senior
5 scientific editor I wrote some sections. I got
other
6 people to write sections. The editors then
took the
7 documents written by other people, we rewrote
those into a
8 single document, we sent those out for review
by a number
9 of scientists around the country, got comments
back,
10 revised it, again developed the full document,
sent it out
11 to scientists around the world, got their
comments,
12 revised it again, and ended up with a consensus
document
13 which was then delivered to the Surgeon General
for his
14 review and release.
15 Q. Okay. You said something earlier about
the cigarette
16 being a nicotine delivery device. Can you
explain what you
17 mean by that?
18 A. Yes, if you think about any drug that a
person takes,
19 it gets into the system by some delivery system.
For
20 example, a pill or a patch or a spray, an
inhaler an
21 injection. In the case of nicotine, the
delivery device is
22 a cigarette, and that turns out to be probably
the best way
23 to deliver an addictive device to an individual.
24 Q. Why is that?
25 A. When you smoke a cigarette, what occurs is
that the

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1 cigarette begins to burn, it generates a mist or
an aerosol
2 of particles, which are the tar particles.
Those particles
3 contain nicotine and tar and water. And then
gasses, a
4 number of gasses that carry the particles out.

5 When a person inhales a cigarette,
the
6 particles and gas get taken down into the
lungs, nicotine
7 is absorbed very quickly through the lungs into
the blood
8 circulation, and within about 10 seconds of a
puff,
9 nicotine goes to the brain in very high
concentration.

10 The puff enters the lungs at one
time. It gets
11 absorbed quickly at the blood stream so there
is a pretty
12 high level that goes to the brain over a short
time. And
13 the faster a drug gets to the brain and higher
the

14 concentration, the more intense the effect.

15 The second part about it is that
smokers can
16 sense how much nicotine they are getting from
the
17 cigarette. So, they change their puffing from
puff to
18 puff, because they are getting feedback as to
how much
19 nicotine. So, it's a way that they take a
drug, they get
20 an effect, they can adjust their smoking
behavior to
21 titrate that effect. So, not only for fast
delivery, high
22 concentrations, but the dose can be very
carefully
23 titrated and controlled by the smoker.
24 All of these things really make it
the best
25 delivery system for a psychoactive drug in
terms of self

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1 administration.
2 Q. Did the tobacco industry realize and
understand this?
3 A. Yes, the tobacco industry has understood
this

4 extremely well.
5 Q. If we could take a look at Exhibit 1054.
Doctor, I'm
6 showing you an Exhibit 1054, a document written
by William
7 Dunn a principal scientist for behavior research
at Philip
8 Morris in the early '70's. Can you tell us a
little bit
9 about this document?

10 A. This was a document that was presented at
a
11 conference for smoking researchers in, I think,
1972 or
12 1973. Phillip Dunn was one of the organizers of
the

with the 13 conference. And he delivered a paper that dealt
in this 14 question of why do people smoke cigarettes. And
that the 15 document he very clearly articulates the concept
nicotine, and his 16 cigarette is really a delivery device for
17 text is very clear about that.

18 Q. Let's take a look at inside the document
if you can 19 point what you are referring to, if we can blow
that up?

20 A. Okay, on page 4 he states that, most of
the conferees 21 would accept the proposition that nicotine is
the active 22 constituent of cigarette smoke. Without
nicotine there 23 would be no smoking. And some evidence to
support this 24 argument include that no one has ever become a
cigarette 25 smoker, smoking cigarettes without nicotine;
that most of

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1 the physiological responses to smoke are
nicotine related;
2 and that despite many low nicotine brands being
introduced,
3 none of them have captured a substantial segment
of the 4 market.

5 He goes on on the next page, page 5.

6 Q. If you could blow that up.

7 A. And here he goes on to say, why is there
not a market 8 for nicotine per se that can be eaten or drunk
or injected 9 or held as a pure aerosol. And he states the
cigarette is 10 in fact the most awe-inspiring examples of the
ingenuity of 11 man, and states that the cigarette should be
conceived not 12 as a product in a package. The product is
nicotine. The 13 cigarette is one of many packaged layers. There
is a 14 carton and pack which contains a cigarette which
contains 15 the smoke, and the smoke is the final package.

16 He goes on to say, think of
cigarette pack as a 17 storage container for a day's supply of
nicotine. Think 18 of the cigarette as a dispenser for a dose unit
of 19 nicotine. And he's -- on the next page.

20 Q. Before we go there, could you explain, it
says its 21 rate of combustion meters the dispensing rate,

there under

22 number 2 at the bottom. Can you explain what
that is?
23 A. Well, this is, here he is talking about
some of
24 the -- some of the aspects of a cigarette that
make it
25 particularly useful as a drug delivery device.
And the

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1 first one is that it's readily activated so you
can light
2 it up and carry it around so you can get the
drug easily.

3 The second is what I said before,
that by how
4 you smoke the cigarette, you can control the
dose of
5 nicotine that you get. And that's extremely
important in
6 terms of the psychoactive drug where you want
to get

7 a certain effect from it.
8 And then the third point here is
that
9 dispensing it, which means smoking a cigarette,
is

10 unobtrusive to most behaviors. So, you can
smoke a
11 cigarette while you are working, watching TV,
talking to
12 your friends. So, it is the drug delivery
system you can
13 use in an ongoing way. It's not a matter of
injecting a
14 drug or having to pop pills. You can do it as
you go

15 along in your daily lives.

16 Q. Does that have an impact on the smoker?

17 A. It does because the easier it is for a
person to use
18 a drug, then the more likely a person is to use
that drug
19 to deal with daily life stresses, and the more
likely one
20 is to titrate up in optimal dose of nicotine.

That's
21 important for smoking behavior. People tend to
take in a
22 similar amount of nicotine from day-to-day, and
that's got
23 implications in terms of products.

24 Q. Was Philip Morris the only company that
understood
25 this?

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1 A. No, all the tobacco companies have
internal documents
2 that address cigarettes as effective nicotine
delivery
3 devices.

is a 1972
scientist

4 Q. Let's take a look at Exhibit 1087. This
5 memo from Claude Teague from RJR, he's a senior
6 there, did you review this document?

7 A. Yes.
8 Q. Can you tell us what the significance of
it is?
9 A. Well, this is a memo from Claude Teague
discussing
10 the importance of nicotine to the tobacco
industry. And
11 really saying that we are a pharmaceutical
industry, our
12 product is nicotine. That's the bottom line of
this
13 document.

14 Q. Let's flip into the first page, and blow
up the top
15 paragraph.

16 A. In the very first sentence he states this
explicitly,
17 that in a sense the tobacco industry may be
thought of as
18 being a specialized, virtualized, stylized
segment of the
19 pharmaceutical industry; that tobacco products
uniquely
20 contain and deliver nicotine, which is a potent
drug with a
21 variety of physiological effects.

22 He goes on on that page in the
bottom paragraph
23 and just says our industry is based on
designing,
24 manufacturing and selling dosage formulas of
nicotine.
25 And our companies position and industry is
determined by

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1 our ability to produce dosage formulas of
nicotine which
2 add more value to the consumer than our
competitors.

3 Q. Has it been your understanding that was
the public
4 stance of the industry, that they were in the
5 pharmaceutical business and selling a drug?

6 A. No, the public stance has been the
opposite, to play
7 down nicotine as a flavoring agent mostly, and
certainly to
8 play down the question that people are using
cigarettes to
9 self-administer a drug.

10 Q. Did the industry understand dosage?
11 A. Yes, they understood, and many documents
deal with
12 the question of optimizing dosage of nicotine
for the
13 smoker.

14 Q. If we could take a look at Exhibit 2107.

This is a
15 1980 Lorillard document, and it's from Richard
Smith of
16 Lorillard, and one of the recipients is Dr. A.
W. Spheres
17 who initially became CEO of Lorillard, senior
scientist at
18 the time. Could you tell us the significance of
this
19 document?

20 And can you blow up the yellow part?
21 A. Well, this is a document which is dealing
with some
22 aspects of designing cigarettes and question of
how much
23 nicotine should cigarettes deliver. And they
state here
24 very explicitly in this study that one of their
goals is to
25 determine the minimum level of nicotine that
will allow

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1 continued smoking. And this has been a very
common theme
2 of the industry. There has been pressure from
the
3 government to reduce nicotine and tar yields.
The industry
4 knows that people are smoking for nicotine and
knows that
5 people will not accept too little nicotine from
their
6 cigarettes, and so documents like this, and many
others
7 have said what is the level of nicotine we must
have in I
8 our cigarette to guarantee that people will
continue to
9 smoke.

10 Q. And did all the industry participants
understand that
11 and work on that design to deliver the minimum
dose needed?

12 A. Yes, there are documents that talk about
minimal dose
13 of nicotine in all the company's documents.

14 Q. Let's take a look at Exhibit 3496-B. This
is an RJR
15 T 1991 document, and it's called the Rest
Program Review.

16 Can you tell us what that is?
17 A. Yes, the Rest Program is one of the ways
that the
18 tobacco companies can control the nicotine
content of
19 cigarettes. And basically what happens in this
is that
20 tobacco products, leaves, stems, whatever, are
chopped up,
21 and then nicotine and other soluble components
are
22 extracted, the solid materials are then

processed to make

23 something that's like tobacco leaf, and then
nicotine and
24 flavorants are added back. But nicotine is
added back in a
25 controlled fashion so that every cigarette can
have exactly

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1 the amount of nicotine that the manufacturer
wants to be
2 there.

3 Again, it's a very important part of
the fact
4 that once you determine what an acceptable dose
is, you
5 want to make sure that every cigarette has
enough nicotine
6 to satisfy the smoker.

7 Q. Let's take a look inside this document.
Can you blow
8 up those two paragraphs.

9 It talks about key issues, and if
you could
10 explain what the first one addresses?

11 A. Well, the first one is what I was talking
about, they
12 can use this process to independently control
nicotine
13 delivery from very low to high levels to address
consumer
14 wants and as a research tool. Another issue
there, and
15 that issue five relates to reducing biological
activity of
16 smoke.

17 Q. What does that mean?

18 A. Well, the issue here, in terms of
biological
19 activity, has to do with the things that cause
disease, to

20 make the cigarettes less hazardous, if possible.

21 Q. And this is an internal document of RJR?

22 A. Yes.

23 Q. Let's flip into it where they talk about
the control
24 nicotine process. And what does this, what does
this --
25 what's this page referring to?

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1 A. Well, this is again talking about this
rest process
2 and really saying that one of their goals is to
develop
3 total control of nicotine content in a product
without
4 affecting smoking performance.

5 And they just restate what the other
RJR
6 document says, that we are basically in the
nicotine
7 business, it is in the best long term interest

of RJR to
8 be able to control and effectively utilize
every pound of
9 nicotine we purchase, and effective control of
nicotine in
10 their products should equate to a significant
product
11 performance and cost advantage.
12 Q. So, they related the nicotine dosage to a
cost
13 advantage; is that right?
14 A. Well, not nicotine dosage per se, but this
is really
15 sort of making use of every milligram of
nicotine in the
16 optimum way to save cost. So, it is really to
use their
17 nicotine, which means they could extract it from
one batch
18 and use it in a second batch, whatever.
19 Q. And is that the position the tobacco
industry took
20 when you were with the Surgeon General's office,
working on
21 that report?
22 A. Well, I had no input from the tobacco
industry when
23 I was working for the Surgeon General. The
public
24 statement has been that our products are natural
products,
25 they're things that we just select and blends
good tasting

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1 tobacco leaves.
2 Q. And did the industry understand the impact
that
3 nicotine had, the pharmacological impact that
nicotine has
4 on the body?
5 A. Yes.
6 Q. If we could take a look at Exhibit 1444,
could you
7 tell us, could you tell us what this is? This
is the
8 research report generated in October of 1995; do
you see
9 that?
10 A. 1975.
11 Q. '75, I'm sorry?
12 A. Yes this a Philip Morris internal
document.
13 Q. And can you tell us what the significance
of it is,
14 if we can go on to the first page?
15 A. This is the document that is following up
on what we
16 just talked about, trying to determine what is
the optimal
17 dose of nicotine for a smoker, and starts out by
restating
18 that nicotine is the main determinant for

sustaining the
19 smoking habit.
20 Nicotine is well known to provoke
pharmacologic
21 effects. And they talk about some of those.
They say
22 apparently there is a optimal nicotine. Too
little or too
23 much is rejected by the smoker. It is
therefore of
24 importance to determine the limits of
acceptability of
25 cigarettes, how low a nicotine yield will be
satisfied to

1683

1 the smoker.
2 Q. And was there evidence in the internal
documents from
3 virtually all the companies that you reviewed
that they
4 tried to make that determination of a minimal
dosage?
5 A. Yes.
6 Q. And they understood the pharmacological
impact
7 nicotine had on say heart rate, blood pressure,
things like
8 that?
9 A. Yes.
10 MR. WEBER: Objection. We have been
leading
11 the witness.
12 THE COURT: Sustained. Disregard
the question.
13 BY MR. COUGHLIN:
14 Q. Can you talk a little bit exactly about
what happens
15 to the smoker? Well, tell us about what is
addiction.
16 A. I'll give you a more complete answer and
then a more
17 succinct answer. The complete answer, based on
the
18 criteria developed by the 1988 Surgeon General's
report, is
19 a is, the compulsive use of a psychoactive drug
that is
20 reinforced by the effects of that drug.
21 By compulsive use, I mean it's a
drug that once
22 one is addicted, it's extremely difficult to
quit. By
23 psychoactive, I mean it is a drug that has
effects on mood
24 or behavior. And by reinforcing, I mean that
the behavior
25 is sustained by the effects of the drug.

1684

1 For example, in reinforcement, if
someone likes
2 to drink coffee, and say I tell a patient I

don't want you
3 to drink caffeinated coffee, most coffee
drinkers can
4 switch to decaf coffee. They may have a
headache for a
5 day or two, but they will switch, and they will
still
6 enjoy their coffee. Most of the pleasure from
the coffee
7 for most people will come from the coffee
drinking, not
8 the caffeine. So, it's reinforced. It may be
partly by
9 caffeine, but it's reinforced by the coffee.
10 In contrast, that would never happen
with
11 cigarettes. If you give someone a cigarette
without
12 nicotine, even if they have the same cigarette,
the same
13 lighting, the same smell, all of it, they won't
smoke it
14 without the nicotine. They will not take it.
So, it's
15 the nicotine that is reinforcing, that's the
complete
16 definition.
17 The simple definition is really loss
of control
18 of psychoactive drug use. Once a person starts
using the
19 drug and they want to stop, it's very
difficult.
20 Q. Did the defendants understand how their
drug
21 delivering device worked?
22 A. Yes.
23 Q. If we could look at Exhibit 3998, can you
tell us
24 what this exhibit is, doctor?
25 A. Well, this is a document that is talking
about some

1685
1 of the characteristics of cigarettes and
nicotine delivery
2 that might be important in sales, and some ideas
for new
3 products that are nicotine based.
4 Q. Let's flip into the first page and see
what we are
5 talking about. It goes through a number of
items, speed,
6 dosage, cost in the future. If you could run
through those
7 and tell us what those mean?
8 A. Well, the first one, again, restates what
I said
9 before, that a cigarette is a drug
administration system
10 for public use and talks about some of the
advantages.
11 The first advantage is the speed.

So within 10
12 seconds of starting to smoke, nicotine is
available to the
13 brain. This causes this very rapid hit, and
also they
14 contrast other drugs such as marijuana,
amphetamines, and
15 alcohol that are very much slower. In fact,
there are a
16 lot of those drugs that are slower.
17 Q. Why is that, why because people smoke
marijuana, why
18 is that, that it might be slower?
19 A. With marijuana it's not the problem that
it is slow
20 getting to the brain, it is the effect of
21 tetrahydrocannabinol, THC, the drug in marijuana,
that are
22 delayed. They don't occur for about 5 or 6
minutes after
23 they start smoking a cigarette. It's not clear
it has to
24 do with the pharmacology, but cigarette smoking
is very
25 rapid.

1686
1 Q. Amphetamines are uppers, right?
2 A. Right, but they are, they are uppers and
so is
3 nicotine in a sense, but amphetamines are
absorbed over 30
4 minutes. So, there is much more gradual rise of
effect.
5 Q. And alcohol?
6 A. Alcohol, the same thing; is absorbed over
15, 20, 30
7 minutes. None of these has a characteristic of
taking a
8 puff and getting an almost immediate drug
effect. They are
9 all delayed.
10 Q. What happens in the brain?
11 A. Well, nicotine gets absorbed into the
brain, and it
12 works on the brain in places that are meant for
13 acetylcholine. Acetylcholine is a hormone in the
brain
14 responsible for transmitting information from
one nerve
15 cell to another.
16 That's a major part of brain
function. And it
17 works by acting on receptors which are
specialized
18 proteins where the drug enters. It's sort of
like a lock
19 and a key. They are meant just for
acetylcholine.
20 Acetylcholine enters it and sort of
turns a key
21 and activates a switch. And something happens.
It turns

22 out nicotine, works on the same receptors as
astilcholine,
23 but instead of your body releasing
astilcholine, you take
24 in nicotine to stimulate it from a drug.
25 When you stimulate those receptors,
you have

1687
1 effects on nerve endings to release a number of
hormones
2 that affect behavior.
3 Q. What are those hormones?
4 A. Well, some of them include astilcholine
itself, which
5 can have an effect on thinking, concentration.
Dopamine is
6 one which is important in terms of feeling good,
reward
7 effects. It is something that is released by
all drugs of
8 abuse.
9 Serotonin is something that is
released that
10 has effects on mood depression, anxiety, in
fact many
11 anti-depressant drugs release serotonin.
12 We have epinephrine on crest is
released, which
13 can cause activation. Cortisol is released,
which is a
14 stress response. Endorphins are sort of like
brain
15 opiates or narcotics are released, which have
effects on
16 pain and anxiety.
17 The net effect is that a smoker
comes to use
18 nicotine to activate a number of different
systems which
19 can vary according to what the person needs.
So, a smoker
20 can smoke a cigarette in the morning and
stimulate
21 themselves to get going. A smoker can smoke a
cigarette
22 when they are stressed and relaxed to deal with
stress. A
23 person can have a cigarette at work when things
are boring
24 to help maintain vigilance. They can have a
cigarette at
25 night with friends to relax, and they can have
a cigarette

1688
1 prior to sleep to relax.
2 Smokers come to use nicotine to
activate these
3 hormone systems within the brain. Many of
them, one is
4 dopamine, but there are many others. And these
hormone

5 systems really come to control mood and
behavior and the
6 smoker comes to learn to cope with life by
activating
7 certain hormones.
8 With nicotine, smokers smoke
cigarettes all day
9 long. And where they don't have the activation
system,
10 they don't feel right, in part, because over
time the body
11 adapts to the effects of nicotine.
12 Q. Is that tolerance?
13 A. It builds tolerance, so then nicotine
doesn't produce
14 the same level of hormone response anymore. But
in
15 contrast, the brain needs nicotine to be there
for a normal
16 response. And then when you don't have
nicotine, you have
17 the opposite of the effects of nicotine itself.
18 So, instead of stimulated you feel
lethargic,
19 you have no pep, you feel bad. You can't
experience
20 pleasure very well. Instead of concentrating,
you can't
21 concentrate. Instead of feeling up, you feel
more
22 depressed.
23 So, when smokers don't have
nicotine, their
24 brains are not functioning.
25 Q. This next, if we can bring that document
back up,

1689

1 talked about low dosage. What does that mean?
2 A. Here they are really talking about the
potency, and
3 commenting that of many of the drugs that people
administer
4 to themselves, nicotine is administered in doses
of one
5 milligram, which is extremely small dose.
6 Cocaine might be a hundred
milligrams, alcohol
7 can be grams. And so the point here is that
nicotine is
8 extremely potent. So, small amounts of it can
have some
9 potential effects.
10 Q. If we can go to the next page, it talks
about cost
11 and the future. Can you talk about those 2
things?
12 A. The cost issue is just very simple. Just
make
13 a point. The cost of a ten minute high in the
UK was about
14 9.5 US cents, that was many years ago. It's
much more

15 expensive now.
16 The future here is talking about
sort of jazzed
17 up cigarettes. They are saying that the
cigarettes are
18 basically a fast highly pharmacologically
effective
19 system; it's a legal system.
20 Q. What's the significance?
21 A. -- or a legal drug. That's very
important, because
22 most people are law abiding people. Most people
don't want
23 to use drugs that are illegal. But if you have
a drug
24 that is very effective at controlling your mood,
and your
25 well, I say, starting smoking is something that
if it's not

1690
1 illegal, people will soon, you know, something
that is
2 reasonable to do, it's not illegal. It's
probably
3 reasonably safe, not horrible for you, still
marketed.
4 And then they can use it without
breaking the
5 law. And that means more people will use it.
Some people
6 will not use marijuana or cocaine because it's
against the
7 law, and they don't want to do that. But a
cigarette is
8 legal, so it makes it easier to use the drug.
9 Q. Further on in the document it talks about
something
10 called a turbo charge, is that --
11 A. Yes, this is interesting. Actually, it's
not here,
12 it's actually a few pages down, it's on.
13 Q. No; that was it.
14 A. Right. This is a very interesting
analogy. They are
15 talking about developing higher nicotine
cigarettes, and
16 they are using an analogy to cars. And they are
saying,
17 the high nicotine in a cigarette is like a V-8
turbo
18 charged version of a German car.
19 In contrast to the standard model of
low
20 nicotine cigarettes, in the UK, they give
examples like a
21 Ford Ciera or Chevrolet Chevette. And then
they say in
22 the U.S, with all of the anti-pollution gear,
which could
23 be thought of as filters and things like that,
this thing
24 may only barely move. And then they go on to

say that our
 25 white rod, which is a cigarette, is apparently
 like any

1691

1 other one until it's lit.
 2 And it's only when it's lit, and
 then they say
 3 when you put your foot on the accelerator,
 figuratively
 4 speaking, things change. And that's because
 you are
 5 getting this charge of nicotine.
 6 So, they are really analyzing the
 situation to
 7 a V-8 turbo charged car. And that's the way
 the industry
 8 has viewed high nicotine in cigarette smokers.
 9 Q. Did the industry understand dependence?
 10 A. Yes, they do.
 11 Q. If we can take a look at Exhibit 2838.
 This is an
 12 August 1979 BATCo document. And can you tell us
 what the
 13 significance of this document is?
 14 A. This document is talking about product
 innovation,
 15 and they are coming to, they are starting out by
 talking
 16 about the development of addiction in smokers.
 17 And they start on the first page
 when they are
 18 talking about a non-smoker. The thing that
 starts a
 19 smoker are factors such as curiosity, the
 parents, image
 20 and peers, so that these are non-pharmacologic
 factors.
 21 And then they go on to the next
 page, and they
 22 begin to say that a person begins to
 acknowledges the
 23 pleasure from cigarettes, and then some of the
 benefits
 24 including anxiety effects, relaxation effects,
 25 concentration effects. These are pharmacologic
 effects of

1692

1 nicotine.
 2 And third stage is dependence on the
 smoking
 3 habits and realization of other benefits.
 4 Q. Is dependence the same as addiction?
 5 A. With addiction, that's the way the Surgeon
 General
 6 viewed it. That's the way I expressed it. And
 I can go
 7 back and forth on the same thing.
 8 Q. And why is that?
 9 A. Some scientific documents, such as the
 World Health
 10 Organization have used dependence to describe

the
Surgeon
Drug Abuse
term to use
compulsive use of
strength of
terms of
And in
hormones that are
about for
addiction best
nicotine in
understood by
that there

11 phenomenon of loss of control of drug use. The
12 General, and actually the National Institute on
13 before them, thought that addiction was a good
14 because it emphasized the strength of the
15 the drug, which is in many ways similar to the
16 the use of heroin and alcohol and cocaine, in
17 difficulty quitting once you start, for example.
18 some of the brain processes, some of the
19 released, some of the other things I talked
20 addiction.
21 So the Surgeon General felt that
22 captured this strength and mechanisms of
23 comparison to other drugs and would be best
24 people in general. I use both terms.
25 Q. Thank you. Did the industry understand

1693
dependence, the
Can you
the
of
smokers. And
of smokers
to be
smokers can be
number of
the, about
increase the
study the

1 was a minimum dose needed to maintain
2 habit, addiction?
3 A. Yes, they have.
4 Q. And would you take a look at Exhibit 4011.
5 tell us about this BATCo document here?
6 A. Well, this document is addressing some of
7 concerns of information about the hazardousness
8 cigarette smoking, reducing the number of
9 they just say in the first sentence, the number
10 will decrease because cigarette smoking is seen
11 hazardous.
12 And then they go on to say if
13 convinced that the hazard is not real, then the
14 smokers will not decrease.
15 And then they go on and talk about
16 the goal, which is to aim to maintain or
17 smoking habit.
18 Q. Did the defendants do animal studies to
19 impact of nicotine?
20 A. They have.

21 Q. And I ask you to take a look at Exhibit
Number 262.
22 And this is a 1961 document produced by BATCo.
Can you
23 tell us what this is about?
24 A. Yes, this is an update on the number of
projects.
25 Hippo and Mad Hatter were the code names for
these

1694
1 projects, which were some of the earlier studies
where the
2 question of how does nicotine maintain smoking
behavior was
3 studied in animals.
4 Q. Where were these studies taking place?
5 A. These took place in the UK, I believe.
6 Q. So, not in this country?
7 A. That's correct.
8 Q. Okay. And what were Hippo and Mad Hatter
products
9 about?
10 A. Well, some of the things that were looked
at were
11 questions of release of stress hormones in the
brain. It,
12 was known en banc back then that a lot of
smokers smoke
13 cigarettes to deal with stress. In fact,
addicted smokers,
14 that is, the one thing that precipitates relapse
to
15 smoking. They can stop smoking for a while;
first major
16 stress they have in their life, the way they
know how to
17 cope was nicotine.
18 And this was a research on stress
hormone
19 release that could play a role in smoking
behavior. They
20 also looked at body weight. Because one of the
other
21 reasons why some smokers smoke cigarettes is
because it
22 reduces appetite and increasing metabolic rate,
body
23 metabolism, and they can stay slim. These
Hippo studies
24 showed the effects in animals and talked about
that as
25 another potential benefit of nicotine.

1695
1 So, they were really beginning to
explore what
2 it is about nicotine that makes people smoke
cigarettes.
3 Q. And internally, if we could go into the
first page
4 in. And what did they understand about nicotine
and smoke?

5 A. Well, this is back in '62 when they make
a, make a
6 comment that smoking is a habit based on a
combination of
7 psychological effects and physiological pleasure
and has
8 strong indications of being an addiction.
9 And then it goes on, makes some
comparisons
10 with other drugs.
11 Q. It says here, it differs in important
features from
12 addiction to other alkaloid drugs, but yet there
are
13 sufficient similarities to justify stating that
smokers are
14 nicotine addicts.
15 And this is from 1961; is that
correct?
16 A. Right. That some of the other alkaloid
drugs are --
17 morphine or heroin is an alkaloid drug. Cocaine
is an
18 alkaloid drug. Amphetamines are alkaloid drugs.
And it is
19 clear that there are big difference between
nicotine and
20 these drugs in terms of intoxication, for
example.
21 But the similarities, there are also
a lot of
22 similarities in type of hormone release in
terms of
23 benefits of stimulation. And this is
emphasizing those
24 similarities.
25 Q. Did consumers in this time frame, let's
take the

1696
nicotine or
1 whole 60's, did consumers understand that
2 smoking could be addictive?
3 MR. WEBER: Let me object, lack of
foundation.
4 THE COURT: Sustained.
5 BY MR. COUGHLIN:
6 Q. Did you find any indication that the
industry was
7 aware of what, or what the industry believed
consumers were
8 aware of?
9 A. The industry's own documents suggest that
consumers
10 are not aware of the effects of nicotine, and
why they are
11 smoking cigarettes. There are -- public
documents
12 certainly deny the fact that cigarettes are
addictive. And
13 their public documents have stated we add
nicotine for
14 flavor and mild psychoactive only.

15 Q. Let's take a look at Exhibit 1868, an
August 24, 1978 document this was produced by Brown & Williamson
from

17 Steele to McCue, August 24, 1978?

18 A. Yes.

19 Q. And can you tell us what this is about?

20 A. Well, this is really an illustration of
the point I

21 just made. They are talking about this is a

paper to

22 outline Steele's views on how, on consumer

attitudes

23 involving nicotine, and he just says that very

few

24 consumers are aware of the effects of nicotine,

that is,

25 its addictive nature, and that nicotine is a

poison.

1697

1 I think that is absolutely true that

that is

2 not something that many people understood until

recently.

3 Q. Okay.

4 Let's take a look at Exhibit 2122.

This is a

5 Philip Morris March, I think it was, 21, 1980

document

6 from William Dunn to a Seligman. I think we

saw Mr. Dunn

7 earlier. Can you tell us what's the

significance of this

8 document?

9 A. Yes, this is a document from Philip Morris

describing

10 some of their internal research on nicotine,

11 psychoactivity, in particular the research of

nicotine on

12 receptors and animal behavior and studies on

nicotine

13 analogs, which are really drugs that are not

nicotine but

14 have the same effects of nicotine.

15 Q. Is this the type of research that you
would expect

16 a company to do that was selling nicotine?

17 A. Yes. Their main product is nicotine. And

I would

18 expect that they would do research to understand

what their

19 product is doing and how it, and why people use

it.

20 Q. And did you find that there had been any

impediment

21 to this study?

22 A. Well, certainly in this document, doctor,

did you

23 know -- explains why the attorneys, counsel at

Philip

24 Morris, thought that these studies were

problematic.

25 Q. Why is that?

1698

1 A. Well, there were two reasons. One is
that, states
2 here that the oldest reason, and implicit in the
legal
3 strategy employed by the years in defending
corporations
4 within the industry against claims of to deceit
smokers, is
5 that we in the industry are ignorant of any
relationship
6 between smoking and disease.

7 So, one is they need to maintain the
fact that

8 we don't know anything about this. That was

Number 1.

9 Q. So that they didn't do biological work in
their own
10 laboratories in this country; is that right?

11 MR. WEBER: Object to the leading
nature again,
12 your Honor.

13 THE COURT: Sustained as to the
form.

14 BY MR. COUGHLIN:

15 Q. And what is the second posture?

16 A. The second posture which is actually lower
down on
17 the page is that any action on our part such as
research on
18 the psychopharmacology of nicotine which
implicitly or
19 explicitly treats nicotine as a drug could well
be viewed
20 as a tacit acknowledgement that nicotine is a
drug.

21 Q. What was the problem with acknowledging
that nicotine

22 was a drug? Didn't everybody know that?

23 A. Well, the industry certainly knew it, and
scientists,

24 I think, knew it. I don't think the public knew
it. And

25 certainly the Food and Drug Administration at
that time was

1699

1 not viewing cigarettes as drugs. They were
reviewing them

2 as, you know, blended products.

3 And there are documents here that
specifically

4 express concern that if we start talking about
nicotine as

5 a drug, then the Food and Drug Administration
may well

6 need to regulate us.

7 Q. So, what did they do with their research?

If we can

8 flip over to the next page?

9 A. Well, at this stage, they continued their,

their
extremely
that they
will
effort to
think that's
exhibit
Wakeham,
the first
Administration
be
model for
smoking as
dangerous
conceptualization beyond

10 research because Dr. Dunn felt this research was
11 important for the future of their field, but
12 were, they, his statement is that our attorneys
13 continue to insist on a clandestine or secret
14 keep nicotine a drug in low profile. And I
15 what happened.
16 Q. Is there an earlier Philip Morris document
17 754, a February 19, 1969 document from Dunn to
18 senior scientist that talks, if you go back into
19 paragraph, the highlighted paragraph there?
20 A. Yes, this, again, is the Food and Drug
21 question. And this document says that we should
22 cautious about using sort of a pharmacologic
23 nicotine. Do we really want to taught cigarette
24 a drug. It is a drug, of course, but there are
25 FDA implications to having such

1700

1 these walls.
2 Q. Doesn't the FDA look at all drugs and
foodstuffs?
3 A. Well, it did not look at cigarettes, still
doesn't
4 look at cigarettes, because cigarettes were
thought to be
5 primarily a pleasure device and rather than a
drug system
6 that was intended to alter body structure or
function.
7 Once FDA begins regulating it, they
begin
8 looking at hazards, they begin looking at
doses, and FDA
9 is really set up as a health evaluation body.
And the
10 last thing the tobacco industry wants is for
someone to
11 start evaluating the health effects of their
products and
12 how much nicotine is in them.
13 MR. WEBER: Object to that last.
14 THE COURT: Disregard the last
portion of that
15 response.
16 Q. Can you tell us a little bit about pH and
what pH is.
17 A. PH refers to the acid base balance. And
it goes on a

18 scale from zero to about to 12. Neutral is
water, at about
19 7. Acid would be a low pH, and that's things
like vinegar,
20 orange juice, lemons that are very acidic. So,
they are
21 low pH.
22 Alkaline pH, or high pH things, are
things like
23 baking soda, lye, soaps, and those are our
alkaline and
24 have a higher pH.
25 Q. Does the pH have an impact on smoke?

1701
1 A. Yes, pH does have an impact on smoke, and
impact on
2 the activity of nicotine within the smoke, and
has effects
3 on both what the person, the smoker, feels in
terms of
4 impact and also on brain wave activation which
is some of
5 the central nervous system effects.
6 Q. Maybe, doctor, if you could step down to
this board
7 and draw a graph that would help explain that to
the jury?
8 A. I'll go back to the idea that tobacco
smoke is made
9 up of particles, which are the particles that
are tar and
10 nicotine, and then a gas phase or vapor phase.
11 And most nicotine is in the
particles, but
12 there is also a certain amount of nicotine in
the gas
13 phase, and the amount of nicotine in the gas
phase depends
14 on the acid base balancing of the smoke.
15 THE COURT: Doctor, let me ask that
you pretend
16 you are speaking to the court reporter, because
it's
17 important for him to be able to hear, not just
the jurors
18 who are closer to you. So, as much as
possible, speak as
19 if you are addressing him.
20 A. Yes.
21 THE WITNESS: Yes, I will.
22 So, I would like to draw a nicotine
particle,
23 and the nicotine in the gas phase and
influences of high
24 pH and lower pH.
25 Okay. These are meant to be
particles, this is

1702
1 at lower pH and higher pH. And I want to talk
about these
2 two forms of nicotine. The form of nicotine

and particles
3 which is, all these Ns is called protenated
nicotine or
4 charged nicotine or nicotine that's associated
with a
5 salt. That's in the particle. The nicotine
that's in the
6 gas phase is unprotenated nicotine, also called
free
7 nicotine or free base nicotine.
8 The higher the pH, the more free
based nicotine
9 occurs in the smoke. So, there is a movement
of nicotine
10 out of the particles into the free base phase.
And it's
11 been shown by the industry that a higher pH is
associated
12 with greater nicotine impact and greater
effects of
13 nicotine on the brain.
14 And it's also known for other drugs,
for
15 example cocaine, that smoking free base cocaine
has a much
16 stronger effect on the body and brain than does
smoking
17 cocaine itself.
18 Q. So, while you are there, can you show to
us a graph
19 what happens to the nicotine that is smoked, the
graph when
20 nicotine is smoked or let's say the gum or
patch, what
21 happens?
22 A. This is a follow up of what I was
explaining before
23 about the importance of the rate of rise of
nicotine and
24 why the effects are different as a function of
how fast
25 nicotine is absorbed. And what I would like to
do, is draw

1703

1 a graph where this is the arterial blood
concentration of
2 nicotine, which would be similar to
concentrations that
3 might get to the brain.
4 And this is a time scale. And I'll
take it out
5 to two hours. When a person smokes a
cigarette, the
6 cigarette is smoked on average in about 7
minutes or 8
7 minutes. And nicotine gets to the brain very
quickly.
8 And there is a big spike, so it looks like this
a rapid
9 rise to a high level. And then it falls off
and it drops
10 like that.

11 This then, is a very rapid rise,
nicotine goes
12 into the brain, there is a big spike effect.
This is
13 cigarette smoking.
14 Now, people have developed other
nicotine
15 forms. There is gum, the patches for
treatment, but it
16 has been well known that these products do not
give the
17 smoker the satisfaction of smoking a cigarette.
In fact,
18 they are helpful in relieving withdrawal
symptoms, but
19 they don't by a long shot substitute for
smoking and make
20 people stop.
21 They are helpful, but they are not
tremendously
22 effective. And the reason is they are
delivered in a
23 different way.
24 For gum, you see peak level of about
30 minutes
25 and peak concentration, that is, less than 10
percent of

1704
1 that of smoking a cigarette. So, that would be
gum.

2 The patch increases very, very
slowly. It
3 doesn't peak in the blood stream for hours,
about 6 hours,
4 and it ends up with a concentration in this
range of about
5 20. But it doesn't get there for about 6
hours.

6 When a person uses a patch, even
though they
7 get reasonable levels in 6 hours, most smokers
can't tell
8 they are getting any nicotine at all because it
is rising
9 so slowly. So, again, it goes back to the fact
this spike
10 of nicotine is really one of the key elements
of why
11 cigarettes are addictive, and other nicotine
products,
12 even though people are getting nicotine, have
not been a
13 substitute for smoking.

14 Q. Thank you, doctor. Did the industry
understand the

15 concept of the raising the pH of smoke?

16 A. Yes.

17 Q. And did they do that to free nicotine?

18 A. Well, they talk a lot about the effects of
pH on free
19 nicotine. There is a lot of research that
addresses the

20 fact that pH increases impact and increases the
effects of
21 smoking.

22 Q. Let's talk, let's take a look at a '73,
'74 Claude
23 Teague document, Exhibit 1208.

24 A. Okay.

25 Q. And this is implications and activities
arising from

1705

1 correlation of smoke pH with nicotine impact.

2 Do you see that?

3 A. Yes.

4 Q. And if you could flip into the first page,
could you

5 tell us what this document is about?

6 A. Yes, this is a sort of a competitive
marketing

7 analysis by R. J. Reynolds, trying to address
the question

8 of why is the Marlboro cigarette doing so much
better than

9 a Winston, even though the nicotine deliveries
are the same

10 by machine, by smoking machine, and why Kool is
doing so

11 much better than I think it was Newport or Salem
-- than

12 Salem.

13 And their analysis of this is that
when they

14 looked at the pH of Marlboro, Marlboro smoke,
its pH was

15 much higher than the pH of Winston. And same
was true

16 for the comparison of Kool and Salem. And they
reasoned

17 that people are liking to smoke Marlboros
because the pH

18 is higher, there is more free nicotine, and
they are

19 getting a better nicotine effect from the
cigarette.

20 Q. Let's flip over to the second page. And
if we take a

21 look, it says, smoke pH and free nicotine in
those top 3

22 paragraphs, if we could.

23 And what does that talk about?

24 A. The first paragraph really states what I
said, which

25 is that sort of at a normal smoked pH at or
below 6,

1706

1 essentially all the smoked nicotine is combined
with acid

2 substances and is not volatile, which means it
is part of

3 the particle and is slowly absorbed by the
smoker.

4 And when pH increases above about 6,

there is
5 an increasing proportion occurs in the free
form which is
6 volatile and states here, is rapidly absorbed,
believed to
7 be instantly perceived as a nicotine kick.
8 Q. And it talks on the bottom paragraph as a
result of
9 the higher smoke pH, the current Marlboro
despite a
10 two-thirds reduction in nicotine over the years,
11 essentially has the same amount as free
nicotine.
12 What does that mean.
13 A. Well, the nicotine and tar ranges of
cigarettes by
14 machine testing have showed reductions in
nicotine and tar
15 levels from about the 1950's, mid-1950's on.
16 This was in response to public
pressure,
17 government pressure to try to make cigarettes
less
18 hazardous. And what this comment says is even
though the
19 nicotine level has dropped by two-thirds, the
impact of a
20 nicotine that was smoked was compensated for by
increasing
21 the pH and that there are actually charts here
which show
22 the effect of pH on the amount of free nicotine
in the
23 cigarette when smoked.
24 Q. Okay. We'll take a look at that on the
last
25 paragraph on this page, where it starts in
addition?

1707
1 A. Right, now here they are start talking
about some of
2 the ways in which you can change pH. And one
thing that's
3 talked about here is adding ammonia to the
blend.
4 Q. And what does that do to nicotine?
5 A. Well, according to these documents,
6 one, it increases the efficiency of transfer
from nicotine
7 from the tobacco to the smoke.
8 And two, it makes the tobacco smoke
more
9 outlined or you know, higher pH. That's what
all these
10 documents suggest occurs.
11 Q. Do you know who Kathy Ellis is?
12 A. Yes, Kathy Ellis is Philip Morris's Vice
President
13 for I think world wide affairs or something like
that.
14 Q. And did you have a discussion with her

about pH and
15 smoke and additions of ammonia?
16 A. Yes, I was contacted by Dr. Ellis
following a
17 deposition that I gave in the tobacco case put
on by the
18 State of Washington Attorney General.
19 Q. And --
20 A. And in that we were talking about what was
the state
21 of the evidence that pH resulted in faster
absorption of
22 nicotine in humans.
23 And I said, no one has ever looked
at that
24 question in humans because the cigarettes with
different
25 pH's are not available.

1708
with the
1 Q. And did she offer to give you cigarettes
2 same pH's?
3 A. Well, the next day or day after I got a
call from Dr.
4 Ellis and said I heard you would like some
cigarettes. And
5 so I said, yes, I'm interested in this question
of does pH
6 influence the rate of absorption. And I'm
interested in
7 doing human studies to test that, but I need
cigarettes
8 that are similar except differences in pH.
9 So, she offered to make cigarettes
with
10 different amounts of ammonia, which I had
assumed, based
11 on all the documents that I read, would mean a
higher pH.
12 Q. And what happened?
13 A. Well, she sent back reports which said,
well, we
14 added ammonia and guess what, it doesn't change
pH.
15 Well, I don't understand that.
First of all,
16 it's not useful to me as a scientist at all
because the
17 issue is pH in terms of rate of absorption.
18 And two, I don't understand why all
of the
19 industry documents say when you add ammonia it
increases
20 pH, and yet when she added ammonia for her
cigarettes, it
21 didn't.
22 And also cigarette manufacturing is
very
23 complicated, and there are a lot of ways to
alter pH
24 besides ammonia. So, I could not use those
cigarettes,

25 and it really was not helpful.

1709

on this 1 Q. So, it didn't change your opinion at all
2 topic?
3 A. No. The documents basically say that
adding ammonia 4 increases pH. And why Dr. Ellis' adding ammonia
didn't do 5 that, I have no idea.
6 Q. Does that make sense from a scientific
standpoint 7 that adding ammonia would free up nicotine does
that make 8 sense?
9 A. Yes, it's explained, well, in these
documents why 10 that should be the case. And again, why the
Philip Morris 11 cigarette they made for me did not do that, I do
not know.
12 Q. If we could go to the graphs. Can you
tell us what 13 this graph is about, doctor?
14 A. Well, this graph is one that looks at the
pH of the 15 smoke. So it's the acid base balance. And the
scale goes 16 from 5 to 7, with, and looks at pH puff by puff.
17 The bottom one is the Winston, which
shows that 18 the pH is substantially lower. Here the pH
average is 19 probably 5.8 or 5.9. And Marlboro the pH is
higher, 20 probably 4.6 or 4.5.
21 Q. In the early 70's when RJR are looking at
their 22 Marlboro cigarette of Philip Morris, right?
23 A. Yes.
24 Q. And if we look at the next charts?
25 A. This next chart shows the data on machine
delivered

1710

Winston on 1 yields from 1955 through 1973, for Marlboro and
2 the top, the top panel.
3 Q. And what's the significance of this?
4 A. Well, at the top panel is tar bottom panel
is 5 nicotine.
6 What this shows is that for most of
the time, 7 and certainly from 1961 on, that the nicotine
that's 8 measured by the smoking machine, total nicotine
was 9 exactly the same for Marlboro and Winston so
that the 10 rating number would be exactly the same. And
it would be

11 about 1.3 milligrams or 1.4 milligrams. They
would have
12 the same rating by machine.
13 Q. And yet the pH ratings were different?
14 A. Yes.
15 Q. And when you say the cigarette rating
machine, what
16 are you referring to?
17 A. Well, cigarettes are rated by a standard
test that
18 was developed by the Federal Trade Commission.
The way
19 this test works is a cigarette is placed into a
machine and
20 connected to a syringe basically. And the
cigarette is lit
21 and the syringe draws out 35 cc's or milliliters
of smoke,
22 which is about an ounce of smoke over exactly
two seconds,
23 repeats that every 60 seconds, until the
cigarette is
24 burned down to a certain distance above the
filter over
25 wrap. So, every cigarette is smoked that way.

1711
1 Now, that's not how people smoke
cigarettes,
2 but that's the standard machine testing way.
And so this
3 graph shows that when you smoke these
cigarettes by the
4 standard machine test, they have exactly the
same nicotine
5 delivery.
6 Q. And is there one more chart?
7 A. Yes.
8 Q. And what's this chart show?
9 A. Well, this chart is a little bit
complicated because
10 of different things on the chart, and can I
point them out,
11 you think.
12 Q. Certainly, you can just lean over and
point right
13 there?
14 A. Well, the top most one really is just the
-- is
15 sales. That's the problem that R. J. Reynolds
saw that
16 Marlboro was selling much more sales than
Winston.
17 This line here, these lines show
that pH's of
18 actually, this is -- yeah, show the pH's of
Marlboro and
19 Winston between 1964 and 1973, showing that the
pH's of
20 Marlboro at one time were similar to Winstons.
But now
21 they are much higher.
22 The bottom graph here shows free

nicotine in a
23 smoke. So, they have gone through and
calculated the
24 effect of pH on free nicotine. And you can see
that in
25 the 70's the free nicotine which has much more
activity

1712
1 than total nicotine is more than twice as high
in the
2 Marlboro than the Winston. So, even though the
machine
3 testing gives them the same nicotine value, the
free
4 nicotine is more than twice as high in the
Marlboro.

5 Q. And did RJR catch up to Philip Morris?

6 A. Yes, eventually the pH's became similar.

They
7 started doing things to cigarettes, adding

ammonia and
8 other things, and pH's became similar.

9 Q. Let's take a look at Exhibit 1935-A. We
skipped a
10 document on you.

11 A. Yes.

12 Q. Okay. Can you tell us what this document
is?

13 A. Well, this is an RJR document. It just
talks about

14 the question of adding ammonia to their sheet
tobacco which

15 has to do with a reconstituted tobacco which is
a big part

16 of cigarettes and just states that Philip Morris
began to

17 add ammonia to their sheet in 1965, and

increased the use

18 of this tobacco quite a lot between '65 and '74,
and that

19 this corresponds to the time period of dramatic
increases

20 in sales Philip Morris made.

21 And then it says that RJR introduced
ammoniated

22 sheet material in the Camel in 1974 and then
saw a better

23 market performance in subsequent years.

24 Q. Now, subsequent to this or around this
time, isn't it

25 true that Philip Morris's pH was actually coming
down?

1713

1 A. Yes.

2 Q. And RJR's was apparently rising?

3 A. Rising, I actually don't have those
numbers. I can't

4 tell you exactly what the change was.

5 Q. Okay. Let's take a look at the next in
line, Exhibit

6 2193. This is September 8, 1980 document from

Alan Rodgman

7 to Dr. Lloyd Morris at RJR. And if we could
flip into the
8 first page, and if we could take a look at the
highlighted
9 portion?
10 A. Right, this is further commentary on the
issue that I
11 just mentioned. RJR is showing graphs
indicating that RJR
12 has caught up with Philip Morris in terms of
nicotine
13 technology, and also saying that their approach
has been
14 one that combines controlling smoke parameters
by blend
15 formulation and removing nicotine, rather than
adding or
16 transferring nicotine.
17 It has to do with some of the ways
that I
18 talked about before, of taking different kinds
of tobacco
19 and then extracting it or adding it to maintain
the
20 desired levels of nicotine.

21 Q. Was Philip Morris and RJR the only U.S.
companies
22 experimenting with ammonia?
23 A. No, other companies were as well.
24 Q. And could you take a look at Exhibit 3318.

This is a
25 Brown & Williamson May 18th, 1989 Research and
Development

1714
1 document. And if we, if we flip into this
document to the
2 summary of the programs, executive summary, if
we could
3 blow that portion up.
4 Can you tell us about what this B
and W says?
5 A. Well, this document, the first refers to a
conference
6 that was conducted to discuss the importance and
use of
7 ammonia technology in making cigarettes. And
it, they talk
8 about knowledge gaps, about areas of possible
9 collaboration, and note that all U.S.
manufacturers except
10 Liggett use ammoniated tobacco on some of their
cigarette
11 products.
12 Q. And does it talk about whether B and W has
been
13 successful in developing ammonia technology?
14 A. Yes, it says that they have, in the
reconstituted
15 tobacco product they have used it.
16 Q. And did any companies, did RJR
specifically think

17 about this technology in reference to the, to a
new brand,
18 the youth appeal brand?
19 A. Yes, they have.
20 Q. Okay. If we could take a look at Exhibit
1223,
21 December 4th, 1973 document from Frank Colby be
to
22 Mr. R. A. Blevins, B-L-E-V-I-N-S, Jr. And if we
could blow
23 up that first portion, can you tell us what this
is about?
24 A. Yes. Here the idea is that youth might
like
25 cigarettes with more nicotine kick, and so we
are talking

1715
1 about going back to the technology of the
cigarettes of the
2 '50's. And their comment, which is really at
the bottom of
3 the page, for how they could do it, is that we
could make a
4 cigarette level with a tar level that's
comparable to Pall
5 Mall, with an old style filter, but not adding
extra
6 nicotine, but getting additional nicotine kick
through pH
7 regulation.
8 So, their concept was, if they had a
higher pH
9 cigarette they could get a greater kick for
their youth
10 cigarette without increasing the total nicotine
yield,
11 which was something they were trying not to do.
12 Q. I want to switch topics for a second and
talk about
13 compensation. Can you tell us what compensation
is?
14 A. Okay. To talk about compensation, let me
go back
15 again and talk about the issue of people smoking
for
16 nicotine.
17 As I said before, people smoke to
get some of
18 the effects of nicotine on brain hormones to
modulate mood
19 performance, pleasure, et cetera. They also
smoke
20 cigarettes because when they don't have a
cigarette, after
21 a certain period of time they feel
uncomfortable, they
22 can't concentrate they feel lethargic, they
have
23 withdrawal symptoms.
24 The net results of trying to both
get the mood
25 control, pleasure control, stimulus control,

and avoiding

1716

1 withdrawal symptoms is smokers to regulate the
amounts of
2 nicotine they take in. They take in similar
amounts of
3 nicotine from their cigarettes day-to-day.
4 Compensation addresses the question
of what
5 happens when a person who has a certain need
for nicotine
6 is faced with a cigarette that's got a
different yield.

7 Q. Could we take a look at your Demonstrative
Exhibit

8 136 PDEM?

9 A. Yes, here is a summary of some of the
points that I
10 was just making. We can think about people
using nicotine
11 both for some primary effects and to prevent
withdrawal
12 effects. And some of the primary effects were
for
13 pleasure, arousal, improving task performance,
relief of
14 anxieties, hunger, body weight reductions, those
are some
15 of the reasons someone might want to take
nicotine for
16 positive affects.

17 And the negative effects from

18 irritability, restlessness, drowsiness,
difficulty
19 concentrating, impaired task performance,
anxiety, hunger,
20 weight gain, sleep disturbance, cravings or
strong urge
21 for nicotine.

22 So, it's a combination of these
things that

23 accounts for people taking in similar amounts
of nicotine
24 day for day.

25 Q. Did you prepare a video about tipping what
we call

1717

1 ventilation?

2 A. Yes, the issue has to do with when the
tobacco
3 companies have said they have lowered nicotine
and tar
4 yields, what does that mean? How do they do
that? And
5 there are several ways to do that.

6 One way is shown on the video, but
in summary.

7 First, I would just say that one way obviously
is filters;

8 they have added filters, and that's been

effective.

9 One way is that since the smoking
machine takes
10 a puff every 60 seconds, if you do something
that makes
11 the cigarette burn faster, faster burning
paper, then the
12 cigarette machine takes fewer puffs on the
cigarette,
13 machine cigarette, before it's burned down.
14 The problem for a smoker, the
Surgeon General
15 machine takes a puff every 60 seconds, and a
smoker can
16 take it every 30 seconds or more if they want
to.
17 Q. Let's talk about that for a second. The
industry
18 knew the cigarette smoking machine didn't mimic
the smoker;
19 is that right?
20 A. They did know that.
21 Q. Now, the FTC also knew that; isn't that
right?
22 A. The FTC knew that also, right.
23 Q. And in fact the FTC told the cigarette
industry,
24 right?
25 A. Sort of when the FTC method was first
developed, the

1718
1 industry said this machine is not going to smoke
the same
2 way as the smoker, as an average smoker, which
was sort of
3 logical because of a very fixed parameters.
4 I'm not aware, however, that the
industry told
5 the FTC that later on when they had data
comparing
6 cigarettes that are higher and lower yield. In
fact,
7 smokers' exposure was the same. I don't think
they ever
8 told the FTC that.
9 Scientists published that, including
some of my
10 own work, but I'm not aware any time that the
industry
11 told the FTC these are data. Take a look at
them. They
12 show low yield cigarettes, not low yield.
13 Q. Are you aware at any time that the
industry told the
14 customers that?
15 MR. WEBER: Objection.
16 THE COURT: Sustained.
17 BY MR. COUGHLIN:
18 Q. Can you describe -- let me hand you --
19 A. Just --
20 Q. Go ahead.
21 A. Let me say, I was, I'm talking about low

yield
22 cigarettes. There is a third point I wanted to
make.
23 Q. Go ahead?
24 A. The third way of doing it is explained in
part on the
25 video. And that's by using ventilation systems
in

1719
1 cigarettes. Ventilation systems are basically
putting in
2 holes in the filter so that when a person sucks
on a
3 cigarette, say if there are no holes in the
filter, you
4 suck on the cigarette, you draw the smoke
through to back
5 on the right, and there is some fresh air coming
in through
6 the paper. But if there are ventilation holes
and you suck
7 in at the tip, then you draw in a lot of fresh
air that
8 dilutes the smoke. And that can dilute the
smoke up to 90
9 percent. And so that accounts for very low
yields.

10 The problem with that is that the
holes are
11 placed in a place on the filter, that it can be
easily
12 blocked by the smoker. It's hard to see them,
but the
13 smoker just learns if I hold the cigarette in a
certain
14 way, the draw characteristics are better, the
taste is
15 better; or if I put my lips on the cigarette in
a certain
16 place, the draw characteristics and taste are
better.

17 So, smokers learn to block these
holes and
18 therefore get -- they really defeat the
ventilation system
19 and get very much higher yields. And the
ventilation
20 system is actually shown on that video.

21 Q. Let's see the video. Can you explain
what's going on
22 here?

23 A. Well, there is the tobacco rod sort of on
the right
24 hand side and filter on the lip. And the
tipping paper is
25 a piece of paper that goes over the sort of
junction

1720
1 between the filter and tobacco rod. And you
will see there
2 is a laser beam coming down which is making

holes in this
3 paper. And those holes are the ventilation
holes. And
4 those holes will allow fresh air to come in when
the
5 cigarette is puffed from the end.
6 Q. Now, is there a good reason, from a design
standpoint
7 though, that those holes are where they are
located?
8 A. There are reasons why, if you, if you
place it too
9 far up, then it makes it difficult to draw the
cigarette.
10 You have to suck harder. So, there are some
technical
11 reasons for it.
12 I would say, though, that these
holes, which
13 are really critical part of the loyal
cigarette, are never
14 explained to the consumer, and they were very
hard to see.
15 If the consumer were to use these cigarettes
properly,
16 they have to know that the hole is there and to
be
17 explained not to block them.
18 And that would be easy to do. You
could just
19 put a marker on a cigarette, a band of color,
that says
20 the holes are here, if you want this to be a
low yield
21 cigarette like we advertise in our
advertisements, don't
22 block these holes.
23 But I've never seen that; that has
ever been
24 explained.
25 MR. WEBER: I'm going to object on
the extent

1721
1 the advertising is post '69, what should be
warned about.
2 THE COURT: I'll sustain, disregard
the last
3 portion of that.
4 BY MR. COUGHLIN:
5 Q. Have you ever seen any statements by the
industry,
6 any public statements, informing consumers on
how to smoke
7 those cigarettes?
8 MR. WEBER: Same objection, post
'69, no
9 objection to the time period before.
10 THE COURT: You can only consider
his answer
11 with regard to after 1969.
12 MR. WEBER: Before '69.
13 THE COURT: You can only consider it

with

14 regard to before 1969. After 1969 there are
certain

15 warnings on cigarettes and those are
controlling on the

16 issues. So, don't consider his response for
whether or

17 not they failed to disclose it after 1969.

18 MR. COUGHLIN: Your Honor, may we
approach on

19 that?

20 THE COURT: Yeah.

21 (The following discussion was
conducted at the

22 side bar between court and counsel, out of the
hearing of

23 the jurors, as follows:)

24 MR. COUGHLIN: Your Honor, I don't
think this

25 is covered at all by the warnings.

1722

1 First of all, there is no
prohibition on the

2 tobacco industry when they are advertising.

There is no

3 prohibition on the tobacco industry when they
are

4 advertising about what they can inform
consumers as to

5 these low tar cigarettes that they are putting
out. It's

6 not covered by the warnings. We are not
talking about

7 what they have to do for disease or anything
else. And

8 just as we saw --

9 THE COURT: His response was broad
enough to

10 allow the jury to consider that that should be
a warning

11 contained on the cigarette pack. And because
Congress has

12 determined what warnings will be put on the
cigarette pack

13 should be, I think they are preempted.

14 MR. COUGHLIN: Which, can I ask him
anything

15 about any statements aside from warnings on the
cigarette

16 packs that he is aware of that the industry has
given

17 along these lines? It's an important issue.

18 THE COURT: You are saying they were
giving

19 warnings someplace else?

20 MR. COUGHLIN: I'm saying they have
not, and

21 consumers are unaware of the impact of what is
happening,

22 and the industry is advertising in such a way
which I will

23 link up with somebody else that essentially --

24 THE COURT: Do you have a response?
25 MR. WEBER: My position on that it
is directly

1723

1 covered by the Allgood, a Fifth Circuit
decision that says
2 if the essence of the claim is that there is a
3 non-disclosure of smoking and health, it's
preempted the
4 same as if it were a direct attack on the claim
on the
5 warning. Allgood is very clear of that.
6 So, even if he says is there some
other way
7 other than the issue, Congress also has
adequately warned
8 people before '69.
9 THE COURT: Stay away from that, and
we'll take
10 a break shortly, and I'll take a look at it
over the
11 break.
12 (The following proceedings were
conducted in
13 open court.)
14 BY MR. COUGHLIN:
15 Q. Was the tobacco industry aware of the
compensation
16 issue?
17 A. Yes, they were.
18 Q. If we take a look at Exhibit 1080-A?
19 MR. WEBER: 80-A or 88.
20 MR. COUGHLIN: 80-A.
21 Q. And can you tell us, this is an RJR
confidential memo
22 March 28, 1972 with Dr. Senkus' name on it; do
you see
23 that?
24 A. Yes.
25 Q. Okay.

1724

1 MR. COUGHLIN: And if I could have
the elmo.
2 Q. Inside that document it talks about
discussions and
3 recommendations, if you flip inside that
document. And can
4 you tell us --
5 A. Yes.
6 Q. And can you tell us what they are talking
about here?
7 You might be able to see it better on the TV
actually?
8 A. Yes, they are just restating what I just
tried to
9 explain to you. He says, in theory and probably
in fact,
10 the given smoker on a given day has a rather
fixed per hour
11 and per day requirement for nicotine.
12 Given a cigarette that delivers less

nicotine
adjust his
obtain and
nicotine.
philosophy of
reducing the
about how,
the smoker is
present low tar,
the smoker
him more
amounts of

13 than he desires, the smoker will subconsciously
14 puff volume and smoking frequency so as to
15 maintain per hour and per day requirements for
16
17 And then it says, despite the
18 critics, there will be no virtue or logic for
19 nicotine level than that desired by the smoker.
20 Q. And did they talk about, on the next page,
21 what the smoker bases his compensation on?
22 A. Right. Then he goes on to say that, if
23 basing his consumption on nicotine, then a
24 low nicotine cigarette offers zero advantage to
25 over a regular filter cigarette, but simply cost
and exposes him to substantially increased
amounts of

1725
obtaining his
expression of
cigarettes to
Morris also
1975
that
Number on
to know
exposed to
lights.
were able to
puffed, how

1 allegedly harmful gas phase components in
2 desired daily amount of nicotine.
3 So, this is really a very direct
4 the compensation idea that people will smoke
5 get the nicotine they want.
6 Q. And did you take a look at whether Philip
7 understood that?
8 A. Yes.
9 Q. If you take a look at the September 17th,
10 document from Goodman to Myer?
11 A. Yes.
12 Q. Can you tell us what the significance of
13 document is?
14 A. Well, this was a study --
15 MR. WEBER: Can we have an Exhibit
16 that's.
17 MR. COUGHLIN: I'm sorry, 1439.
18 A. Shall I start.
19 Q. Yes, please.
20 A. This is a study where Philip Morris wanted
21 how many of our smokers actually have been
22 smoking Marlboro full flavor and Marlboro
23 The way it was done is that they
24 measure the number of puffs, how fast it was
puffed, how

25 long the puffs were, and then to use that to
sort of
1726
1 program the smoking machine to smoke like the
smokers
2 actually smoke their cigarettes.
3 And what they showed was that
smokers of
4 Marlboro full flavor and Marlboro lights,
despite
5 substantial differences in FTC ratings,
resulted in
6 exactly the same exposure of nicotine and tar
for the
7 smokers. So, there was no difference in
smoking the
8 Marlboro light or the Marlboro.
9 Q. And is that the conclusion in that
document?
10 A. Yes, basically it says the smoker data in
the study
11 are in agreement with the results found in other
project
12 studies. And then it talks about larger puffs.
And then
13 on the next page it says in effect, the Marlboro
85 smokers
14 in this study did not achieve any reduction in
smoke intake
15 by smoking a cigarette, the Marlboro Lights,
normally
16 considered lower in delivery.
17 Q. What's the concept of mutagenicity?
18 A. That's something that deals with the
cancer causing
19 potential of tobacco smoke. The idea is that
cancer
20 develops when chemicals in tobacco smoke react
with DNA,
21 genetic material, to damage the DNA. And then
when cells
22 in the body with damaged DNA reproduce
themselves, or grow,
23 which cells normally do, the products of that
division are
24 mutated.
25 And there are tests looking at
bacteria where

1727
1 you can look at the mutation potential of a
given
2 chemical. This can be done in the urine of
smokers and we
3 have done this in our studies showing that
people smoking
4 low yield cigarettes and high yield cigarettes
have the
5 same mutagenic activity in the urine, even
though the
6 cigarettes of tar is very different.
7 It can also be done in the tar

itself, from low

8 yield cigarettes to high yield cigarettes, to
look at the

9 amount of mutagenic activity or potential
cancer causing

10 activity in the tar.

11 Q. Did the cigarette industry take a look at
this?

12 A. Yes.

13 MR. WEBER: I object. There was no
reference

14 on the subject of mutagenicity in Dr.
Bentowitz's report.

15 I didn't object to that at first.

16 MR. COUGHLIN: I think it's covered
by

17 compensation, your Honor; high and low yields.

18 MR. WEBER: Mutagenicity is a
subject separate

19 from high and low yields, it is a whole
separate area of

20 testing.

21 MR. COUGHLIN: Yes, it is.

22 THE COURT: Ask another question,
and we'll

23 deal with it in the context of a specific
question.

24 MR. COUGHLIN: Okay.

25 Q. If you take, if you take a look at Exhibit
2516.

1728

1 If I could have it on the elmo. If
we take a

2 look at Exhibit 2516, the RJR document 2/25/83
from Chris

3 Lee to Dr. Rodgman, and it talks about low tar
smoke. Is

4 low tar smoke safer; do you see that?

5 A. Yes.

6 Q. You probably will be able to read it
easier on the

7 TV. It's in handwriting. Either way, can you
tell us what

8 exactly is going on here?

9 MR. WEBER: We object to that, your
Honor.

10 This is mutagenicity testing.

11 THE COURT: I think it's more
relevant to the

12 issue of compensation, so, I'll allow it. I
think the

13 general direction of the quote that's been put
on the

14 board deals with compensation. And the
question as to

15 whether low tar and nicotine cigarettes were
safer, I

16 think those are within the balance of the
doctor's report.

17 BY MR. COUGHLIN:

18 Q. And what did RJR conclude?

19 A. Well, they basically stated that it's hard

to know if
that is to
generated.
own
with the
yield

20 low tar smoke is safer. One of the ways to test
21 look at mutagenic activity of the tar that gets
22 And this document says that in our
23 experience that the mutation rate was higher
24 smoke from lower yield cigarettes than higher
25 cigarettes, from the tar in those cigarettes.

1729
yield
nature of
could take a
the court's
done about
done at the

1 So, this would suggest that low
2 cigarettes were not safer with respect to the
3 the tar, actually more hazardous.
4 MR. COUGHLIN: Your Honor, if we
5 break now, I think that I have to, in light of
6 ruling, move some stuff around. And I'll be
7 minutes after the break.
8 THE COURT: Well, you'll need to be
9 end of the break. We'll take about 12 minutes.
10 well, five minutes after be back in the jury
11 Throughout this time frame don't talk about the
12 yourselves or with anyone else. Don't form any
13 or express any.

14 (Brief Recess.)
15 THE COURT: Mr. Coughlin.
16 MR. COUGHLIN: Thank you, your
Honor.

17 BY MR. COUGHLIN:
18 Q. Dr. Benowitz, did Philip Morris do central
nervous
19 system research?
20 A. Involving nicotine, yes.
21 Q. Can you tell us about that?
22 A. Well, some of the most important work was
done by Dr.
23 Victor DeNoble in 19 -- late 70's, early 80's.
And he did
24 a series of studies, which I think are extremely
important.
25 He was looking at animal models for why people
smoke

1730
systems where
press a bar

1 cigarettes, and he was looking at what's called
2 self-administration of drugs. These are test
3 you teach an animal how to do something, like
4 to get drugs or substances, and you see how hard

an animal
whether they
to do it.
research.
were really
first people
nicotine.
controversy about
this is
lot to screen
might abuse
acid aldehyde,
also one of
body, and
alcohol like
would
even more
gave the
1731
that the
than even
aldehyde had a
more than
cigarettes
any of the
from Philip
Morris.
Q. And that was in 1981?
A. The studies were done or finished up
around 1981.
Q. And when did you work on the Surgeon
General's report

5 is willing to work to get a substance or drug,
6 will do it, and if so, how hard they will work
7 And he was an expert in doing that kind of
8 And he did a series of studies that
9 quite interesting. First, he was one of the
10 to show that animals would self-administer
11 Prior to that there had been a lot of
12 whether animals would do this.
13 And this test is important because
14 a test that behavioral pharmacologists use a
15 on the abuse ability of a drug. An animal will
16 self-administer, there is concern that a human
17 it.
18 The second study he did involved
19 which is a chemical in tobacco smoke. It's
20 the major breakdown products of alcohol in the
21 is believed to have some activity on some
22 activity, perhaps. And he showed that animals
23 self-administer acid aldehyde.
24 And the third study he did, maybe
25 interesting, is that he showed that when he
1 combination of nicotine with acid aldehyde,
2 animals self-administered it much more, more
3 could be predicted by the sum of the other.
4 So, it's like nicotine and acid
5 super effect when combined, so the effect was
6 the sum of the two. I think that has important
7 implications for understanding why people smoke
8 and was also never made public to my knowledge,
9 acid aldehyde work until I saw the documents
10 Morris.
11 Q. And that was in 1981?
12 A. The studies were done or finished up
13 Q. And when did you work on the Surgeon
General's report

14 on nicotine?
15 A. 1988.
16 Q. And you didn't have the benefit of these
studies that
17 were done in the early 80s?
18 A. No.
19 Q. And did, are those studies the results of
those
20 studies contained in Exhibit 2326?
21 A. Yes.
22 Q. Did somebody review those studies in 1983
without
23 mentioning any names?
24 A. Yes. The studies were reviewed by lawyers
for Philip
25 Morris.

1732
Exhibit 2576.
2 And can you tell us some of the conclusions that
were
3 reached by the lawyers working for Philip Morris
on these
4 studies?
5 MR. LERMAN: Your Honor, just for
the record,
6 we want to interpose an objection to the
document on the
7 grounds the judge, you have already read ruled
on this.
8 THE COURT: I'm sorry; I didn't hear
the last
9 portion.
10 MR. LERMAN: I wanted to state the
privilege
11 objection for the record, your Honor.
12 THE COURT: And I'll overrule that
objection.
13 BY MR. COUGHLIN:
14 Q. And a review of these studies revealed
what, doctor?
15 A. There were comments from attorneys
objecting to the
16 fact that Philip Morris was doing some of these
studies and
17 they explained why for several of the studies.
18 For example, on the first page they
are talking
19 about results that were not published, trying
to identify
20 where in the brain nicotine was working as a
reinforcer to
21 smoking. And they were actually, the
scientists were able
22 to identify areas where nicotine seemed to be
working.
23 And on the next page the response
from the
24 lawyers is that a troublesome aspect of this
report, as is
25 typical of all the papers in this packet, is
that nicotine

1733

central
fact that
may be
importance of
studies?
development
with
the same
time, It has
is
very
laboratory.
it is
implications
is
addiction. It
classical
such has not
implications
showing

1 is treated as a drug and a drug affecting the
2 nervous system. Then it goes on to say the
3 Philip Morris is even engaged in such research
4 taken as indicating a particular view of the
5 nicotine in cigarette smoking.

6 Q. Did it go on to discuss some of other

7 A. Yes, study II was one that worked at the
8 of behavioral tolerants to effects of nicotine
9 repeated doses.

10 Q. What's the effect of tolerance?

11 A. Tolerances means when you are exposed to
12 drug, the same amount of it all the time, over
13 less effect of the given drug over time. This
14 indicative of drugs that are abused over time,
15 addictive drugs, this was done in the

16 And then on page 3, the lawyer said

17 obvious that such a report has undesirable
18 for smoking and health litigation. Tolerance
19 frequently cited as one of the hallmarks of
20 is the industry's position that one of the
21 criteria for addiction is tolerance, and that
22 been demonstrated in case of nicotine.

23 And it goes on to talk about the
24 of the findings in this laboratory in fact
25 tolerance.

1734

on page 6?

again
studying action of
the
with positions
smoking.

1 Q. Does it go on and talk about another study
2 A. Yes, on the fourth study they talk about,
3 involves central nervous system effects,
4 nicotine on behavior. And the lawyers again say
5 emphasis on this study on central nervous system
6 pharmacologic actions is clearly at variance
7 the industry takes with regard to nicotine and
8 Q. Is there anything else of significance in

that

9 document to you?

on the

10 A. Yes, actually there is a summary on page,
11 bottom of page 7 and at the beginning of page 8.

12 Q. And we don't have that on the screen?

13 A. No.

14 Q. If you could just tell us what that is?

of this

15 A. Well, this states that the overall results

that few

16 research are extremely unfavorable. It says

capacities of

17 people accept the showing that reinforcement

addictive.

18 a drug are sufficient to label that drug as

criterion for

19 However, many people do use that as a primary

20 assessing abuse liability of a drug.

people accept

21 And they go on to say that some

that rats

22 reinforcement capacity again talking the study

criteria

23 self-administer nicotine is one of the several

strengthens the

24 for an addictive drug. This research

drug. And

25 adverse case against nicotine as an addictive

1735

cigarette

1 it also goes on and says the addiction view of

influenced by

2 smoking posits that cigarette smoking is

DeNoble,

3 circulating levels of nicotine in the blood.

this decision,

4 present DeNoble research is consistent with

influenced

5 since the reinforcing actions of nicotine were

levels.

6 by experimental manipulation of blood nicotine

judged to

7 So, here very important research was

position about

8 be extremely adverse to Philip Morris's

9 addiction.

you in 1988?

10 Q. Did you have this research available to

11 A. No.

12 Q. I ask you to take a look at Exhibit 3213?

13 A. Yes.

14 Q. This is a Tobacco Institute, 1988 release.

Is that

15 about the time, May 16, 1988, is that about the

time of the

16 release of the Surgeon General's report on

addiction?

17 A. Yes.

addictive

18 Q. And it says claims that cigarettes are

19 contradicts common sense; is that right?

20 A. Yes.
21 Q. And that was what the industry said in
response to
22 your report?
23 A. Yes.
24 Q. And exactly it says here on the bottom,
the claims
25 that smokers are addicted defy common sense and
contradict

1736
1 the fact that people quit smoking every day; do
you see
2 that?
3 A. Yes.
4 Q. Did the fact that people quit, does that
make
5 something non-addictive?
6 A. No, people quit all addictions, and
studies comparing
7 addictions actually show comparable quit rates.
And in
8 fact there is important variation among smokers,
it's
9 stated here that 40 million Americans are former
smokers,
10 and 95 percent of smokers quit without help.
Well, that is
11 correct. However, for most of these smokers it
was not
12 easy. On average it took four or five quit
attempts. On
13 average it took many years. In many cases
people quit only
14 when they were told that they had some health
injury. So,
15 this is misleading in terms of how easy it is to
quit
16 smoking.
17 Now, it is true that there are
differences
18 among smokers. Some fortunate smokers can quit
smoking
19 without much disruption of their life. And
those people
20 are lucky.
21 Some smokers, no matter what they
do, can never
22 quit. Or don't seem to be able to quit unless
you put
23 them in jail and take the cigarettes away from
them.
24 Those people are not fortunate.
25 Most of the others are in-between.
They can

1737
1 quit, but it's difficult, and it takes a lot of
work and
2 lot of and often many years.
3 We understand actually there are
genetic
4 reasons for some of this. The full explanation

is not
that people
some
highly
people are
further
me a few
Benowitz?
represent
ask you some
some of the
some of the
own clients,
1738
me just
I get into
about the
quit for a
people who are
could
who were
it and the
least some
are they
diet and lose

5 available, but we are beginning to understand
6 are different, smoke for different reasons, and
7 people are susceptible to becoming much more
8 addicted than others. But the vast majority of
9 addicted and have a great difficulty quitting.
10 MR. COUGHLIN: Thank you, doctor; no
11 questions.
12 THE COURT: Cross examination.
13 MR. WEBER: Your Honor, if you give
14 seconds I have to get some papers moved over.
15 CROSS EXAMINATION
16 BY MR. WEBER:
17 Q. Thank you, your Honor. Good morning, Dr.
18 A. Good morning.
19 Q. My name is Bob Weber. We haven't met. I
20 R. J. Reynolds Tobacco Company. I'm going to
21 questions in general about your testimony and
22 issues you raise regarding RJR Reynolds. And
23 other lawyers will have questions about their
24 all right, sir?
25 A. Yes.

1 Q. Good morning, ladies and gentlemen. Let
2 touch on a few issues you mentioned first before
3 them in detail.
4 At one point you mentioned something
5 percentage of people who try to quit, who may
6 while and then relapse, correct?
7 A. Yes.
8 Q. And you also talk about the number of
9 smokers who were surveyed and say they wish they
10 quit, right?
11 A. Yes.
12 Q. In both those issues the number of people
13 surveyed who said they would wish they could do
14 number of at issue who try to quit and have at
15 period of failure, those statistics are close;
16 not, sir -- with respect to people who try to

17 weight?
18 A. I don't know offhand the numbers for
dieting and
19 losing weight.
20 Q. You do know that the diet relapse rates
are equal to
21 or greater to the relapse rates for smoking
cessation. You
22 testified to that?
23 A. I would suspect that's true. I don't know
that for
24 certain, but from my experience, I suspect
that's true.
25 Q. Just in the ballpark?

1739

1 A. Yes.
2 Q. You are familiar with the fact that most
people are
3 overweight, you ask them, they say they want to
lose
4 weight, right?
5 A. Yes.
6 Q. And they don't?
7 A. Yes.
8 Q. And that's just evidence there are a lot
of things we
9 do in our lives, a lot of choices we make where
we may wish
10 to do one thing, and we just don't carry it out.
That's
11 true. That's part of human nature, right?
12 A. Well, some things. I think weight is a
particularly
13 good example of that, because being of low body
weight is
14 important in our culture. But I must say that
food is
15 something that people need to have. No one ever
needs to
16 have nicotine.
17 Q. People don't need to have red meat though,
right?
18 A. That's correct.
19 Q. And indeed, you have got a cardiology,
practice,
20 correct?
21 A. Yes.
22 Q. And when someone has a heart attack or may
come to
23 you or the cardiologist you practice with, you
tell them to
24 change their diet, correct?
25 A. Yes.

1740

1 Q. And you tell them to stay away from
certain kinds of
2 foods and saturated fats?
3 A. Yes.
4 Q. And some of them can't -- strike can't.
Some of them
5 won't do that, right?

6 A. Some of them don't do it.
7 Q. Fair enough.
8 Now, again, I want to delve into
this ammonia
9 issue in detail later. I just want to touch on
a general
10 issue. You said you saw some documents that
ammonia
11 raised pH in cigarettes, right?
12 A. Yes.
13 Q. And you showed to the jury no document,
did you, sir,
14 that showed that ammonia actually did raise pH
over a
15 period of time in commercial cigarettes?
16 A. No, the documents that I saw stated that
in words,
17 but I never saw data.
18 Q. And you are not stating from that stand
today, are
19 you, sir, that ammonia used in commercial
cigarettes was
20 used in amounts sufficient enough to actually
have a
21 material effect on smoke pH?
22 A. The only thing I'm stating is what the
documents
23 stated. I have no personal research experience
with adding
24 ammonia in making cigarettes.
25 Q. And you don't know how much ammonia would
need to be

1741

1 added to affect pH?
2 A. That's correct.
3 Q. You do know from the documents you have
reviewed that
4 there are other reasons that relate to the use
of ammonia
5 in cigarette processing, correct?
6 A. Yes.
7 Q. One of those reasons is that ammonia
improves smoke
8 quality, right?
9 A. Yes.
10 Q. And that's particularly true with respect
to
11 reconstituted tobacco which has poor smoking
quality,
12 correct?
13 A. Yes.
14 Q. Reconstituted tobacco, as you know,
reduces tar and
15 nicotine as compared to natural leaf, correct?
16 A. Well --
17 Q. On FTC testing?
18 A. On tar it does. Nicotine depends because
of the
19 control of nicotine. They can do it either way.
20 Q. Let me ask this, when I talk about
reducing tar and
21 nicotine, let's assume I'm talking FTC test

methodology?

22 A. Yes.

23 Q. On the FTC test methodology did they find
that
24 reconstituted tobacco reduced tar and nicotine
compared to
25 the natural leaf?

1742

1 A. Yes, you could use recon actually to
increase
2 nicotine. That was talked in some documents.

But I think

3 in general, what you are saying is correct.

4 Q. And the recon has never been used in
commercial
5 cigarettes to increase the amount of nicotine,
the amount,
6 has it?

7 A. I don't know one way or the other.

8 Q. You are certainly not making that claim as
part of
9 your testimony?

10 A. That's correct.

11 Q. Now, with respect to the role of ammonia
on smoking
12 quality, you know that ammonia reacts with
sugars and
13 tobacco, correct?

14 A. Yes.

15 Q. And there is a special binding of the
ammonia,
16 reaction of the ammonias and sugars, and it
releases

17 certain flavorful components, doesn't it?

18 A. Yes.

19 Q. And components with names like pyrazines
and

20 pyridines, correct?

21 A. Yes.

22 Q. And that improves the overall taste
sensation for the
23 smoker?

24 A. Yes.

25 Q. You made one other point, and my last
general quick

1743

1 point, you made one other point on the issue of
faster
2 burning paper?

3 A. Yes.

4 Q. And said that burns faster and in-between
the time
5 that the machine took the puffs?

6 A. Yes.

7 Q. And that would work for a real smoker too,
if a
8 smoker puts it down in the ashtray it is going
to burn
9 faster; the same way as when the machine's not
puffing,
10 right?

11 A. Yes.
 12 Q. Now, Dr. Benowitz, you are personally
 familiar with a
 13 number of the scientists at the R.J. Reynolds
 Research
 14 Laboratories, aren't you?
 15 A. Yes.
 16 Q. You know Dr. Townsend?
 17 A. Yes.
 18 Q. You know Dr. DeBattisti?
 19 A. Yes.
 20 Q. Doctor John Robinson, Dr. Gary Bird and
 others,
 21 correct?
 22 A. Yes.
 23 Q. You have read work they have published,
 correct?
 24 A. Yes.
 25 Q. And you have read published work on
 nicotine by
 1744
 1 researchers for other companies as well,
 correct?
 2 A. Yes.
 3 Q. Over the years, as a matter of fact, there
 has been
 4 some degree of assistance you have provided to
 the RJR
 5 Reynolds research department, correct?
 6 A. Yes.
 7 Q. You have reviewed, your laboratory has
 reviewed some
 8 blood samples for them for experiments they were
 doing?
 9 A. Yes.
 10 Q. And you told us earlier with respect to
 Philip Morris
 11 some of the discussions you had with Dr. Kathy
 Ellis about
 12 some research you had done as well?
 13 A. That was a little different. That, Philip
 Morris
 14 contacted me with an offer to support an
 experiment which
 15 was not in fact supported in a relevant way.
 That I don't
 16 consider that, the same thing, my laboratory
 doing analyses
 17 for some of the earlier RJR studies.
 18 Q. So, you weren't actually doing the
 analyses for
 19 Philip Morris, but you at least had a discussion
 with them
 20 about some experiments; is that fair?
 21 A. I had a discussion because the critical
 aspect of
 22 testing some of the questions with pH depends on
 having
 23 cigarettes that only the industry can make. And
 I wanted
 24 to try to get those cigarettes, and I couldn't.
 25 Q. By the way, did you know that R. J.

Reynolds removed

1745

ammonia
ago?
any of the
information about
what was it
not? To the
used in
not
affects
documents say
offered an
it, but
scientists?
year
were invited
expert

1 reconstituted tobacco sheet that contained
2 processing from its Winston blend several years
3 A. I did not know that.
4 Q. And have you examined, were you provided
5 documents or did you examine or ask for
6 what was the pH before ammonia was removed and
7 after?
8 A. I have not seen those documents.
9 Q. That would be relevant though; would it
10 question of whether pH changed with ammonia as
11 Winston, it would be relevant to that question?
12 A. Yes, although I'm, I'm really, I've really
13 offered an opinion as to whether I think ammonia
14 pH. What I said was that pH changed, and the
15 that ammonia manipulation is one way to do it.
16 Q. And you have been very clear, you haven't
17 opinion that in fact it didn't, it's a way to do
18 you haven't offered an opinion that it hasn't?
19 A. That's correct.
20 Q. You have done experiments with Reynolds
21 A. Yes.
22 Q. In 1994, for example, I think I've got the
23 right, you, Dr. Townsend, and Dr. DeBethesey
24 to participate in the National Cancer Institute
25 proceedings on the FTC method?

1746

experts,
people were
its expert
were one of
anybody

1 A. That's correct.
2 Q. You had discussions there?
3 A. Yes.
4 Q. And that was a panel of what, of about 14
5 the actual panel?
6 A. Something like that.
7 Q. And another example was that in 1996, ten
8 invited by the government of Canada to serve on
9 committee on cigarette modification, and you
10 those, right?
11 A. Yes.
12 Q. That invited people, could have invited

13 throughout the world?
14 A. Yes.
15 Q. They invited leading researchers, correct?
16 A. Well, they wanted people with specific
research
17 interest and really those interested to do with
product
18 modification and product safety.
19 Q. And they invited you, you were one of the
10, right?
20 A. Yes.
21 Q. And they invited two scientists from R.J.
Reynolds,
22 correct?
23 A. Yes.
24 Q. Dr. DeBethesey and Dr. Townsend were both
invited by
25 the government of Canada to participate in that,
correct?

1747
1 A. Yes.
2 Q. And in the course of these meetings and
these
3 discussions you have had legitimate scientific
back and
4 forth with the R. J. Reynolds scientists, right?
5 A. Yes.
6 Q. You don't reject any advice though just
because
7 they are from R. J. Reynolds, do you? You don't
-- let me
8 ask it this way. You don't reject their views
just because
9 of their status; you have discussions with them
on the
10 scientific merit, right?
11 A. Right. And I would have to say my
experiences with
12 them in certain areas, I have no question about
their
13 comments. Dealing with science, chemistry some
of the
14 data, there have been some statements made by
scientists
15 about addiction, I think, are disingenuous.
16 Q. Well, you don't agree on everything,
right?
17 A. I think the data really speak for
themselves.
18 Q. Fair enough.
19 Now, you would agree that people can
and do
20 quit smoking?
21 A. Yes.
22 Q. Each year about 1.3 million Americans quit
smoking
23 right around there?
24 A. Something like that.
25 Q. About 50 million Americans today who used
to smoke

1748

1 but don't, who have quit?
2 A. Yes.
3 Q. And these are people who quit for good;
they are
4 done?
5 A. Yes.
6 Q. And today there is about as many former
smokers in
7 the country as there are smokers, correct?
8 A. Yes.
9 Q. And for many of those former smokers, as I
think you
10 have said, quitting may have been difficult?
11 A. Yes.
12 Q. But still the great majority, I think you
said on
13 direct 95 percent quit on their own without
professional
14 help, right?
15 A. Yes.
16 Q. They didn't do, use patches, correct?
17 A. Right. That may be changing now that
patches are
18 over the counter, but these data were before
patches were
19 over the counter.
20 Q. Okay. They weren't using patches. They
weren't
21 using nicotine gum. They weren't using nicotine
inhalers,
22 right?
23 A. Right.
24 Q. They weren't going into halfway houses or
detox
25 centers right?

1749
1 A. Correct.
2 Q. Now, you mention that sometimes it takes
several
3 attempts before someone quits?
4 A. Yes.
5 Q. Isn't it true that the odds assessed on
quitting
6 increase with the number of attempts one has
made?
7 A. Yes.
8 Q. So, you are not criticizing these people
for having
9 made several attempts. That's a sign of growing
motivation
10 that there have been several attempts?
11 A. I think so. It's important to encourage
people when
12 they fail to sort of regroup their strength and
to do it
13 again. But I also think it's very strong
evidence for the
14 power of the nicotine addiction, that it takes
them many
15 attempts and so much effort before they can
finally stop.
16 Q. Just like it may take many attempts and a

lot of
want to. I'm
have
doctor,

17 effort before somebody loses the weight they
18 not saying it's a drug induced situation?
19 A. People have to eat. People don't have to
20 nicotine, unless it gets sold to them.
21 Q. Out of these 50 million people who quit,
22 union members have quit, haven't they?
23 A. I'm sure.
24 Q. Blue collar people?
25 A. Yes.

1750

1 Q. White collar people?
2 A. Yes.
3 Q. People in big cities, people in towns?
4 A. Yes.
5 Q. People with M.D's, people with Ph.D's?
6 A. Yes.
7 Q. People who haven't finished high school?
8 A. Yes.
9 Q. The entire spectrum of American society is
included
10 in there?
11 A. Yes.
12 Q. Did you come to tell this jury anything
about the
13 specific quitting or smoking experiences of any
individual
14 member in the ironworkers union?
15 A. No.
16 Q. Or the dealers union?
17 A. No.
18 Q. Or any of the unions that are involved in
this case?
19 A. No.
20 Q. Did you attempt to, did you yourself or
have you
21 commenced a survey that sought to get data from
the
22 individual fund participants?
23 A. No.
24 Q. Did you inquire as to whether medical
records or
25 smoking histories were available to you with
respect to any

1751

1 individual union fund participant?
2 A. No.
3 Q. So, am I correct, doctor, that you have
neither asked
4 for or reviewed the medical records or the
deposition
5 testimony of any individual fund participant?
6 A. Correct.
7 Q. Now, this is your third straight business
day on the
8 witness stand, right?
9 A. Unfortunately, yes.
10 Q. And you were testifying last week in a

case against
correct? 11 tobacco companies out on the west coast,
12 A. Yes.
13 Q. That was Thursday or Friday?
14 A. Yes.
15 Q. And when you testified there in that case,
you had
16 read medical records of the individual in that
case,
17 correct?
18 A. Yes.
19 Q. And that was important to understand the
individual,
20 correct?
21 A. Well, this was an individual, an addiction
related
22 case, yes.
23 Q. And to give that opinion on addiction, as
you said
24 out there, you needed to know something about
the
25 individual and read their records, right?

1752
that's 1 A. To make a comment about one individual,
2 correct.
3 Q. And then in January, you testified in
another tobacco
4 case on the west coast against certain tobacco
companies,
5 right?
6 A. Yes.
7 Q. And in that case you read the medical
records too,
8 didn't you?
9 A. That was another individual case; is that
correct?
10 Q. Now, the 50 million people who have quit
smoking,
11 doctor, they all smoked cigarettes with
nicotine, right?
12 A. Yes.
13 Q. And the people who were going to quit this
year, next
14 year, and that they are all smoking cigarettes
with
15 nicotine too, correct?
16 A. Yes.
17 Q. You would agree with me that people don't
start
18 smoking because of nicotine, correct?
19 A. Absolutely.
20 Q. And nicotine doesn't make it impossible
for people to
21 quit, correct?
22 A. Well.
23 Q. You may believe it's hard, but it doesn't
make it
24 impossible; is that correct?
25 A. Well, that's correct -- well, you say
there are some

1753

1 people who try as they may seem never to be able
to quit.

2 So, there maybe, and this is a population that
we have been 3 trying to deal with in other ways.

4 Not physically impossible, clearly
you can put

5 someone in the hospital ward and not give them
cigarettes

6 and they will stop smoking. But there are some
people on

7 their own who seem not able to quit.

8 Q. But you said before it is not impossible
for anyone

9 to quit?

10 A. It's not physically impossible; that's
correct.

11 Q. Now, nicotine doesn't prevent a smoker
from

12 understanding the warnings on the pack, does it?

13 A. Yes and no. It doesn't prevent them from
reading the

14 warnings, understanding the words. It may
influence their

15 interpretation of the warnings because someone
who's

16 addicted is looking for excuses to keep on doing
the

17 behavior that they want to do.

18 This is true for any kind of drug
addiction.

19 And for example, with the warnings, if
something comes out

20 and says the Surgeon General says that smoking
is harmful

21 to your health, many smokers will say, that's
the

22 government telling me what to do.

23 The tobacco company is not saying
that,

24 they are selling the product. It's legal. It
couldn't be

25 that harmful. It's just the government telling
me what to

1754

1 do.

2 So, people interpret warnings in
different ways

3 if they are addicted or not addicted.

4 Q. And some people don't want the government
telling

5 them what to do?

6 A. Yes.

7 Q. But that doesn't go to my question which
is

8 intellectually, nicotine doesn't prevent someone
reading

9 and understanding warnings. They may not want
to read it

10 and act on it, but I'm talking reading it

intellectually?

11 A. Reading the words and understanding what
they mean
12 for the cigarette smoker is influenced by being
addicted.
13 There is a lot of evidence asking people what
they think
14 the risk of cigarettes are and cigarette
smoking. They
15 think there are less risks than non-smokers.
16 Q. Have you seen any research that shows the
general
17 public itself, and smokers included as a
subgroup,
18 overestimate the mortality risk of smoking?
Have you seen
19 that research?
20 A. I've seen different sorts of research like
that, but
21 also again if you look at the perception of a
smoker
22 compared to a non-smoker, smokers perceive it to
be less
23 risky than non-smokers.
24 Q. But, you are familiar with the research
that even
25 smokers overestimate the risk?

1755
be. I
2 A. I don't recall the specifics. It may well
3 don't recall the specifics.
4 Q. Now, nicotine doesn't prevent or interfere
with an
5 individual's ability to hear what people tell
them about
6 smoking, does it?
7 A. No.
8 Q. So, if he hears from parents, doctors or
friends that
9 he ought to stop, he or she ought to stop, they
can hear
10 that and take that in, right?
11 A. Yes.
12 Q. And Ohio union members who smoke, they are
as able to
13 understand those warnings and listen and hear as
well as
14 anybody else, right?
15 A. Yes.
16 Q. There are some studies in fact that show,
I think you
17 mentioned, that nicotine actually increases
concentration
18 for people, their ability to focus, right?
19 A. Yes and no. Let me explain that.
20 The simple answer is yes. There is
an effect.
21 The biggest effect is actually reversing the
impairment of
22 concentration that occurs when a smoker is not
smoking.
23 What has been shown, is there is a decrement in

the
The smoker
smoker.
cigarette.

23 performance of a smoker without a cigarette.
24 concentrates less well than someone who's not a
25 That gets normalized as soon as they get a

1756

1 There has also been some research
using the
2 more subtle techniques showing the reaction
time test.
3 And things like that can be improved by
nicotine, even in
4 a non-smoker. The magnitude of that effect is
much less
5 than the reversal of the inherent that occurs.
6 So, most of the concentrating of
cigarettes is
7 normalizing function of someone who's in
withdrawal.
8 Q. But there are such studies, correct?
9 A. Yes.
10 Q. And, by the way, with respect to these
studies, and
11 the statistical studies that have been done with
respect to
12 smoking, haven't there been some studies that
show, again
13 with respect to central nervous system functions
is all I'm
14 focusing on now. There have been some studies
on the
15 central nervous system that shows that smoking
has a
16 protective effect, statistically, on conditions
like
17 Alzheimers and Parkinsons?
18 A. Yes.
19 Q. And while nobody understands, that theory
is either
20 something about the effect of nicotine on the
central
21 nervous system that prevents that, those
conditions occur
22 less often in smokers, correct?
23 A. Well, it's not clear if it's nicotine or
something
24 else in tobacco smoke.
25 Q. Fair enough.

1757

1 A. I can explain that, it's complicated, but
there are
2 different theories, but there is some protective
effects of
3 smoking.
4 Q. On Alzheimers and Parkinsons?
5 A. Yes.
6 Q. Now, when you are back in San Francisco,
when you are
7 not traveling, you see patients, what, about a

third or a
8 third of your time?
9 A. Yes.
10 Q. Because you have research and
administrative
11 responsibilities et cetera?
12 A. Yes.
13 Q. And when you see your patients, and
primarily in
14 internal medicine, cardiology type practice --
15 A. Yes.
16 Q. When you see those patients and they are
smokers, you
17 advise them to quit, correct?
18 A. Yes.
19 Q. You don't tell them they can't quit, do
you?
20 A. You mean, tell them that they are unable
to quit?
21 Q. Yes, I'm sorry?
22 A. No.
23 Q. And you don't, when you are in a session
with a
24 patient, you don't call them addicts, do you?
You don't
25 say you are an addict?

1758
1 A. No. I mean, I might, I wouldn't say that
we haven't
2 talked about addiction. Some patients will just
tell me
3 I'm addicted to this stuff.
4 In general, I just focus on the fact
that you
5 are a smoker and we have to get you to stop
smoking.
6 Q. You don't as, a matter of your general
practice, when
7 a smoker comes into you, and you advise them not
to smoke,
8 you don't tell them they are and addict, do you?
9 A. Not as a practice, no.
10 Q. For someone who wants to quit, motivation
is a very
11 important factor?
12 A. Yes.
13 Q. Indeed, I think some studies have shown,
and you have
14 said motivation is even more important than any
individual
15 cessation aide like a patch or inhaler, correct?
16 A. Well, yeah. It comes back to my very
first statement
17 about having to balance the disruptive effect of
not
18 smoking requires very strong something on the
other side
19 that says why I have to quit.
20 And so it takes a strong factor on
the quitting
21 side to balance the strong factor on the keep
on smoking

22 side.
23 Q. And that strong factor is individual
self-emphasis
24 or --
25 A. Which is influenced by a lot of things,
yes.

1759

1 Q. And indeed, even the packaged material
that goes with
2 some of the stop smoking aides advises people
that without
3 motivation this doesn't do you any good, right?
4 A. Yes.
5 Q. Now, nicotine has a pharmacological effect
because of
6 its bio availability; is that fair to say?
7 A. Well, that's a funny way to say it
scientifically.
8 What is.
9 Q. Maybe because I'm not a scientist?
10 A. Is the point that it's supposed to, that
it has to
11 enter the body.
12 Q. Bio availability, as I understand it, and
correct me
13 if I'm wrong, doctor, it means the uptake into
the body and
14 eventually its transmission up to the central
nervous
15 system?
16 A. Well, it just refers to uptake into the
body.
17 Q. Without bio availability then, it wouldn't
have the
18 effect on the receptors, et cetera, that you
have been
19 talking about, correct?
20 A. It would not have the effects I was
talking about.
21 There are some issues, and I don't know if you
want to get
22 into this, there are ways that nicotine can have
effects
23 without even being absorbed on receptors in the
throat and
24 mouth.
25 Q. It could have taste effects, taste
sensations that

1760

1 have nothing to do with receptors in the brain,
correct?
2 A. Well, it can also stimulate nerves that
impact on the
3 brain also, that are -- even before nicotine
gets into the
4 blood stream. So, there are other things that
it can do,
5 but the bulk of the effects I believe involve
nicotine
6 getting to the brain.
7 Q. And affecting the receptors as you

described, right?

8 A. Yes.

9 Q. Now, nicotine isn't the only thing that affects
10 receptors, is it?

11 A. No, many things affect receptors. All drugs almost
12 affect receptors.

13 Q. And caffeine can cause up regulation of receptors;
14 can it not?

15 A. Yes.

16 Q. And milk can, correct? Particularly, isn't there a
17 substance called tryptophan in milk?

18 A. I'm not sure about up regulation. Tryptophan can
19 affect neurotransmitters.

20 Q. Does that mean it's psychoactive?

21 A. It has some psychoactivity.

22 Q. And psychoactivity, rather than me to give you an

23 explanation that would be scientifically correct, can you

24 tell us what briefly psychoactivity means, an effect on the

25 brain and it's neurotransmitters?

1761

1 A. It really means something that affects mood or
2 behavior by effects on the nervous system. And in fact
3 milk makes you slightly drowsy. And that's psychoactivity.

4 Q. So, mom was right when she used to tell us to have a
5 glass of warm milk. She told us to go to bed.

There is
6 some science on that now?

7 A. Yes.

8 Q. How about chocolate? That has some psychoactivity
9 through the theobromine?

10 A. Some.

11 Q. Indeed, aren't your receptors in the brain working
12 all the time, whether you got a substance that is

13 pharmacologically active as a drug or not?

14 A. Yes, the question we are talking about here is, is
15 sort of driving it or controlling it with a drug that you

16 are administering on frequent basis.

17 So, it is, but on a spontaneous basis receptors
18 are how the brain works.

19 Q. And indeed, there is increased levels of stress level,
20 psychoactivity that occurs depending on one's

21 one's anxiety, et cetera, right?

22 A. Well, that's a funny way to ask the

question. There
23 certainly are. Brain chemicals release
phenomenon
24 associated with different moods and behaviors.
25 Psychoactivity is talking about a drug factor,
or I'm not

1762
1 sure what the question is.
2 Q. Let me see if I can ask it again. And if
not, tell
3 me where you think I'm wrong.
4 You can get chemical reaction among
the
5 receptors through various states of anxiety,
excitement,
6 stress, whatever, correct?
7 A. Yes.
8 Q. Indeed, a witness might have increased
receptor
9 activity. So might a lawyer in a situation like
this,
10 correct?
11 A. Yes.
12 Q. Now, I want to put aside for a moment,
doctor, the
13 receptors and the brain issue and nicotine.
We'll come
14 back to that later. And I want to follow up the
point you
15 made a moment ago about another possible effect
of nicotine
16 that relates to the mouth and throat, okay?
17 A. Yes.
18 Q. So, these questions, right now I want to
focus on the
19 mouth and throat and nicotine does contribute,
does it not,
20 to the taste and sensation of smoking?
21 A. Yes.
22 Q. And you know that smokers and indeed you
see this in
23 some of the documents and published literature,
smokers
24 refer to things like throat scratch or throat
grab or mouth
25 feel when they are talking about smoking,
correct?

1763
1 A. Yes.
2 Q. And that phenomenon is referred to as
impact,
3 correct?
4 A. Yes.
5 Q. And impact as you use the term, and as
others use it,
6 relates to the effect in the mouth and throat
area of the
7 smoke, correct?
8 A. Yes.
9 Q. And scientists sometimes refer to those
effects as

10 organoleptic effects, correct?
11 A. Organoleptic is just a very vague term.
It's not
12 very specific. And I don't think it's specific
for that
13 effect it really has to do with, you know. It's
not a good
14 term.
15 Q. I didn't mean to suggest it was specific
to smoking
16 and mouth, throat, but that is a term used in
reference to
17 that, correct?
18 A. I think so, but I would have to say I
never
19 understood why that term was used.
20 Q. Now, when you talked about free nicotine
earlier,
21 these Ns that aren't in the circle, that was
your free
22 nicotine?
23 A. Right.
24 Q. And to be fair, you weren't trying to be
25 mathematically precise or trying to draw to
scale. You

1764

1 were just demonstrating an issue?
2 A. Yes.
3 Q. Let's take it in that spirit. But the
free nicotine,
4 the nicotine and the gas, that's the nicotine
that is
5 absorbed and hits in the mouth and throat,
correct?
6 A. Yes.
7 Q. And that nicotine does not reach and bind
with the
8 receptors in the brain, correct?
9 A. Right. It may impact brain activity by
working on
10 the sensory nerves in the throat, but it does
not reach the
11 brain at that time.
12 Q. And that effect of the free nicotine in
the mouth and
13 throat being part of the taste and sensory
experience of
14 smoking is an important part of smoking. It's
not all of
15 it, but it's an important part of it?
16 A. Yes.
17 Q. And the effect that that has -- that that
free
18 nicotine has in the mouth and throat is it
stimulates some
19 nerve endings in it.
20 A. Yes.
21 Q. And those are the same kinds of nerves
that are
22 stimulated impact-wise by a hot chili pepper,
right?
23 A. Well, if you talk about sensory nerves

broadly, yes.

24 There are specific nerves that have as
astilcholine
25 receptors that nicotine works on. I'm not sure
chili

1765

1 peppers are working on the same nerves, but if
you want to
2 look at the whole category of sensory nerves in
the throat,
3 nicotine would work on one set and chili pepper
on another.

4 Q. So, nicotine and other substances may not
work on the

5 exact same set of nerves in the mouth and
throat, but it's

6 the same general phenomenon for taste and
sensation; is

7 that fair?

8 A. Yes, I'm not sure about the other part of
it, though,

9 which I said that there are connections between
sensory

10 nerves in the throat and the brain.

11 And so that you actually can get
brain

12 activation from activating sensory nerves. At
least, that

13 has been shown in animal studies and likely
true in

14 people.

15 Q. I'm sorry, I missed the end?

16 A. And is likely to be true in people. For
nicotine, I

17 don't know if that's true for chili peppers.

18 Q. With respect to what you just said shown
in animal

19 studies, and likely to be shown in people, it
hasn't been

20 shown in people because those experiments
haven't been done

21 yet, correct?

22 A. That's right; they are hard to do.

23 Q. And indeed, you said with respect to that
very issue,

24 at your deposition, didn't you, that this,
that's the

25 phenomenon you just described about the special,
a special

1766

1 reaction of nerves in the mouth and throat
sending a signal

2 to the brain is a theory until it's proven with
human

3 experiments, correct?

4 A. Yes, there is good evidence based on
animal studies

5 that's true, but it's not been demonstrated in
humans.

6 Q. Now, because of the effect of these of the
free

7 nicotine particles on the mouth and throat,
doctor, it's
8 fair to say, isn't it that smokers don't smoke
only for
9 whatever effect there may be on the central
nervous system
10 and the receptors in the brain; is that fair to
say?
11 A. There is one issue which I didn't really
talk about,
12 and that's the whole issue of conditioned
aspects of
13 smoking. And I should explain that because
that's
14 important and that relates in part to this.
15 Q. Could you answer my question first? Do
you need to
16 explain that to answer my question? My question
only is,
17 do smokers smoke only for the effect on the
receptors in
18 the brain, only?
19 A. Well, it's complicated question because it
depends on
20 the time frame. If you ask -- ultimately, the
question is
21 yes. When you are getting nicotine, like if you
didn't get
22 nicotine to your brain, you would not keep
smoking.
23 Once you are a smoker and you are
getting
24 nicotine on your brain, you come to like or to
appreciate
25 and like a lot of other things that go along
with nicotine

1767

1 delivery to your brain.
2 For example, the taste, the smell,
handling a
3 cigarette, all those things, the bite, all
those things
4 become rewarding because they are linked to
smoking, to
5 getting nicotine to your brain.
6 If you take nicotine out, you might
smoke a
7 cigarette for a day or two and get some
satisfaction
8 because you like these other things. But
within a few
9 days you stop smoking because there is no
nicotine going
10 to your brain.
11 So, the answer to your question is
complex. In
12 the short run, yes; those things are important.
In the
13 long term, no nicotine to the brain, no
smoking.
14 Q. Converse is true also, isn't it, that it's
been shown

15 in experiments that the mere presence of
nicotine isn't
16 enough to keep somebody smoking.
17 Let me ask my question better. I
can see I've
18 puzzled you.
19 Isn't it true in the 1964 Surgeon
General's
20 report you reported on experiments in which
lettuce based
21 cigarettes were made, lettuce based, and then
laced with
22 nicotine, and smokers wouldn't smoke them; is
that true or
23 not?
24 A. I have a vague recollection, but I don't
recall the
25 study's results. I can't comment on them.

1768

1 Q. Would that help if I referred you to that
page,
2 doctor?
3 A. Sure. And show it to me, please.
4 Q. Sure. Did I say that was the '64 report?
5 A. Yes.
6 Q. Okay. Well, that may be part of the
confusion. I
7 think it may be the '81 report. I read my notes
wrong.
8 This is -- you are familiar with the '81 report?
9 A. Yes.
10 Q. Let me refer you down here, doctor, at
this sentence
11 that begins there. Does that say that at the
same time it
12 has been difficult to demonstrate that smokers
will use
13 nicotine in a non-tobacco medium. In one study
lettuce
14 leaf cigarettes injected with nicotine were
smoked for one
15 week periods at intake levels only approximately
50 percent
16 the rate of subject's own brand, and with the
protest of
17 reduced satisfaction, do you see that?
18 A. But I would have to say that this
experiment is
19 problematic for some of the reasons I just
talked about,
20 for conditioning. And we found this too. That
people
21 become used to delivering nicotine in a
particular vehicle,
22 so to speak, to use Dr. Dunn's terms the
vehicles to smoke.
23 And they learn there are certain
taste
24 characteristics of the smoke, certain bite
25 characteristics, and people like their own
cigarette

1769

1 smoke. If you give them a strange cigarette,
whatever it
2 is, they tend not to smoke as much, they don't
like it as
3 much, and they have a hard time smoking it.
4 So, part of the problem is they are
switching
5 to a cigarette that tastes terrible. But if
you gradually
6 wean someone, or if you started someone on
lettuce
7 cigarettes with nicotine from the very
beginning, it's
8 quite possible they would ultimately smoke them
and for
9 the same nicotine they would for a tobacco
cigarette.
10 Q. You haven't done those experiments, have
you?
11 A. And no. No one would ever do that. And
I'm just
12 saying the study that you showed me does not
prove the some
13 point you made.
14 Q. Well, the Surgeon General said at least
people have
15 not turned to nicotine in a non-tobacco medium;
isn't that
16 what it said?
17 A. Well, why would you do it because nicotine
is
18 naturally available in tobacco. It's cheap in
tobacco.
19 Why would you make the trouble of having
nicotine in
20 something else.
21 Q. There has been a lot of work, hadn't there
doctor, on
22 tobacco substitutes?
23 A. That's to reduce the risk of, I don't
think burning
24 lettuce is going to reduce the risks. It still
generates
25 tar and other constituents.

1770

1 Q. Hasn't there been research done on tobacco
2 substitutes to which nicotine was added and they
were
3 failures too?
4 A. Can you be more specific? What research?
5 Q. Are you familiar with any of those
attempts in
6 Britain or in Europe with respect to tobacco
substitutes in
7 which nicotine was added? Do you know anything
about that
8 or not?
9 A. I'm not sure what you mean. Are you
talking about
10 things like Premier and Eclipse.
11 Q. I'm about to get there, but I'm not there

yet. I'm

12 talking about some time ago actual tobacco
substitutes?

13 A. I don't recall the studies.

14 Q. Now, and indeed, let me just ask you one
or two
15 questions now about Premier. I have some more
later.

16 Premier was a cigarette that my client R.J.
Reynolds put

17 out on the market for a short period of time?

18 A. Correct.

19 Q. And the Premire cigarette had no
traditional tar,
20 correct?

21 A. I'm not sure what you mean by no
traditional tar. It

22 had much more lower tar delivery than most
cigarettes by

23 some test. The characteristic of the cigarette
was

24 different.

25 Q. It had no combustion products; is that
fair to say,

1771

1 because it didn't have combustion?

2 A. As I recall, there was a small amount of
combustion,

3 not nearly as much as a regular cigarette. But
there was a

4 small amount of combustion.

5 Q. Would you at least agree that the tar was
6 substantially, significantly different?

7 A. It was lesser an amount.

8 Q. It was in some ways 80 90, 95, 99 percent
reduced,

9 correct?

10 A. It was a lot reduced. I forget the
numbers, but it

11 was markedly reduced.

12 Q. And while it had that very low level of
tar, it had a

13 light level of nicotine, correct?

14 A. It actually delivered as much nicotine as
a regular

15 cigarette.

16 Q. Okay. And that was a failure in the
marketplace and

17 consumers reported they didn't like it, right?

18 A. Right. But that's the same issue that I
just talked

19 about. If you go back to when filters were
added to

20 cigarettes, smokers did not like filtered
cigarettes, they

21 thought they were terrible. They had no taste,
they were

22 weak.

23 But over time smokers were educated
about it

24 and/or started smoking it. They switched, and
now smokers

25 like filtered cigarettes, the same ones smokers
would have

1772

1 thought were terrible years ago. People's
taste about
2 cigarettes are educatable in a sense.
3 And if you said let's make a
transition, let's
4 change the characteristics of our cigarettes,
let's reduce
5 the tar gradually over 10 years and end up with
a Premier
6 cigarette 10 years later, I think you could
probably get
7 most smokers to smoke a Premier.
8 But if you are trying to put it in a
cigarette
9 that they smoke every day for 20 years, and say
here is
10 something that is totally different, they won't
take it.
11 Q. Going back you say the government and
voluntary
12 health organizations urged people to quit, but
if they
13 didn't quit, to smoke lower tar and nicotine,
correct?
14 A. Yes.
15 Q. So, was there any urging from the
government and the
16 voluntary health community for people to switch
to Premier,
17 were they supporting Premier?
18 A. There was some debate within the community
about
19 doing that, but I don't think there was any
public support.
20 Q. Indeed, Surgeon General Koop told the FDA
to pull it
21 off the market, didn't he?
22 A. I don't recall if he told them to pull it
off or not.
23 Q. Now, the pH range of commercially
available American
24 cigarettes, it's between 5.5 and 6.5 generally?
25 A. Yes.

1773

1 Q. That's the same point the commentators
have made,
2 correct?
3 A. Yes.
4 Q. And if we go back in the literature, you
would see,
5 would you not, Dr. Benowitz, that from the 70's
until now,
6 that's been pretty consistent, correct?
7 A. Yeah, there has been some bouncing around.
For
8 example, we talked about Marlboro that started
at 6.7 in
9 the 70's and is now down to 6.1 or 6.2.

10 Q. When you say 6.7, where do you get that
 from?
 11 A. That was from the RJR document.
 12 Q. We'll get into this later, but do you know
 what
 13 method was used for that?
 14 A. I don't remember. I would have to look at
 the
 15 document.
 16 Q. You do know from the RJR documents that
 even their
 17 own pH testing used different methods over time
 and even
 18 different methods at the same time?
 19 A. I know different methods are available. I
 don't
 20 recall the specifics with respect to RJR.
 21 Q. And you do know there is variability with
 the various
 22 methods, correct?
 23 A. Right. But one thing which is hard to
 argue with, is
 24 the difference between the Winston and the
 Marlboro and
 25 Winston was 5.7 and Marlboro was 6.7. No matter
 how you
 1774
 1 test it, that difference would persist.
 2 It's true that the scale may change,
 but the
 3 cigarettes were different, and that's clear.
 4 Q. Do you also know that when testing pH R.
 J. Reynolds
 5 for example takes a number of measures and then
 takes
 6 averages, looks at high, low, even at the same
 battery of
 7 tests?
 8 A. That's what most people do. I don't know
 the
 9 specific procedure at R.J. Reynolds.
 10 Q. Do you know whether that 6.7 was what
 statisticians
 11 call an outlier; was it the highest number, was
 it an
 12 outlier; was it an average?
 13 A. I don't know for sure, but I assume if
 R.J. Reynolds
 14 was putting such a huge amount of efforts into
 that, they
 15 wouldn't have just taken one measurement. I
 mean, their
 16 scientists are not stupid.
 17 Q. Well, you know that memo you put up from
 Dr. Rodgman
 18 that you said talked about catching up?
 19 A. Yes.
 20 Q. Okay. Do you know that the Winston pH
 measurement on
 21 there was the single highest measurement for
 that year out
 22 of all the testing; did you investigate that?

23 A. No.
24 Q. Did you investigate whether or not from
the data that
25 was available from that time period what the
other pH
1775
1 measurements were at R.J. Reynolds?
2 A. I don't understand the question on the
Winston.
3 Q. On the Winston or anything else, any other
pH test
4 they did, did you go beyond that memorandum to
see what was
5 available that year?
6 A. That year, no.
7 Q. Now, I want to ask one quick question
about this
8 other chart, and maybe I'm done with the chart,
doctor.
9 Am I correct, if I understand this,
your
10 arterial blood over time, and this is, this
curve you drew
11 was nicotine reaching the central nervous
system?
12 A. Well, it's in the blood. But the levels
in the brain
13 would mirror the blood levels.
14 Q. This was not meant, that's what I wanted
to clarify,
15 this was not meant to deal with, or was it, the
nicotine in
16 the mouth and throat?
17 A. No.
18 Q. So, that is not meant to indicate anything
with
19 respect to pH and the division between free
nicotine and
20 bound nicotine, correct?
21 A. Correct.
22 Q. Because that was in your pH discussion.
And I got
23 confused as to whether you meant to include it
in that or
24 not; you did not?
25 A. Correct.

1776
1 Q. Now, the fact that tobacco contains
nicotine is
2 something that's been known for well over a
hundred years,
3 correct?
4 A. Yes.
5 Q. And the fact that nicotine has effects on
the nerves
6 of the brain, that's been studied throughout the
century as
7 well, correct?
8 A. Yes.
9 Q. A lot of research done by tobacco
companies, a lot of

10 research done by people outside of tobacco
companies,
11 right?
12 A. Yes.
13 Q. And you are familiar with the collection
of the
14 Larson Savette book Tobacco Experimental
Clinical Studies
15 was published in '61?
16 A. Yes.
17 Q. And the Surgeon General cited that book;
did he not?
18 A. Yes.
19 Q. In his '64 report?
20 A. Yes.
21 Q. And what Larson Hague did, or Larson and
Savette
22 eventually Larson, Hague and Savette did, what
they call a
23 survey of all the exigent published literature
related to
24 tobacco?
25 A. Yes.

1777

1 Q. And I'm not going to get into the
substance of that
2 research with you, but I just want to say, even
doing that
3 survey and collecting all that information in
one place was
4 a significant event for researchers in the area,
correct?
5 A. It was very helpful source; that's for
sure.
6 Q. Indeed, when you want to redo research
today and you
7 can sit down and Medline or one of the other
services, and
8 punch in and get hundreds of data points, right?
9 A. Yes.
10 Q. Back then they didn't have personal
knowledge,
11 computers, Medline, all the research had to be
done walking
12 somewhere, studying, finding what you could?
13 A. Yes.
14 Q. And that's why the Surgeon General cited
this and
15 referred to it because it was really a
compendium of
16 everything that was out there as of that date?
17 A. Yes.
18 Q. And you know that work was funded in part
by the
19 funds from these companies, correct?
20 A. Yes.
21 Q. Now, there has been an understanding, you
would agree
22 with me, I assume from early in the century,
last century,
23 as far as we want to go back, that tobacco's
been used that

24 the use of tobacco can be hard to quit?
25 A. Yes.

1778

1 Q. You know the old Mark Twain story and the
stories
2 even before then, correct?
3 It was known in 1964 and before that
it could
4 be hard to quit and that people often had
strong urges or
5 cravings to smoke, correct.

6 A. Yes.

7 Q. It was known before 1964 that nicotine had
8 psychoactive effects?

9 A. It was certainly known by scientists. You
know, the
10 industry has from time to time tried to play
that down.

11 Q. Well, my question is, it was known before
1964 that
12 nicotine had psychoactive effects, right?

13 A. Yes.

14 Q. And indeed, from your early days of
smoking, even
15 smokers themselves would joke about it,
recognize it, talk

16 about it, say I need a smoke to calm my nerves,
things like
17 that, correct?

18 A. Yes.

19 Q. And indeed there were a lot of complaints
early in
20 the century, were there not, from people about
the fact

21 that smoking was hard to quit?

22 A. Yes.

23 Q. You are familiar with Henry Ford; are you
not?

24 A. I'm not sure; tell me the story.

25 Q. Not in this context, maybe. The Henry
Ford of the

1779

1 automobile industry, he actually published a
book called
2 the Case Against the Little White Slaver, saying
it was
3 hard, accusing tobacco of being impossible to
quit,
4 difficult to quit, it made people slaves. Are
you familiar
5 with that?

6 A. I've not read that book. I should get a
copy.

7 Q. And with all of that, do you know -- by
the way,
8 Thomas Edison was from over, born over west of
here toward
9 Norwalk. Do you know that Thomas Edison refused
to hire
10 smokers because of the effect on the central
nervous

11 system; that's what he said?
12 A. No.
13 Q. Now, even with all that was known
scientifically and
14 otherwise, the Surgeon General in 1964, that
committee when
15 they looked at this issue, and they did look at
the issue
16 of how to characterize smoking behavior, right?
17 A. Yes.
18 Q. They concluded at that time that the best
way to
19 characterize it was as an habituation, correct?
20 A. Right. And that had to do with their
definitions
21 that they were in place at that time.
22 Q. And indeed, I want to go through a few of
these
23 definitional issues with you. And that's an
important
24 point to keep in mind. That the behavior of
smoking is the
25 behavior of smoking, but the definitions can
change over

1780

1 time, correct?
2 A. Yes.
3 Q. So, we can, smokers have been smoking for
years and
4 generations, but scientists and lay people,
whatever, they
5 may change the way they describe the behavior,
correct?
6 A. Yeah, but I must say there are also, may
change their
7 appreciation for how tenacious the behavior is,
what
8 actually drives the behavior, so it's more, it's
a little
9 more complicated.
10 Q. Fair enough.
11 And in 1964 the Surgeon General said
it was
12 important to distinguish smoking from
addictions, since
13 the biological effects of tobacco, like coffee
and other
14 caffeine containing beverages, are not
comparable to those
15 produced by morphine, alcohol, barbiturates,
and many
16 other potent producing drugs. That was said in
'64
17 correct?
18 A. Yes.
19 Q. And that's because they were using a
different
20 definition than you used, correct?
21 A. Yes, they were focusing on the heroin
model, which is
22 really intoxication, and severe withdrawal
symptoms, as

23 well as anti-social behavior, had to be part of
a drug to
24 be addictive. And by that definition, in fact,
cocaine and
25 amphetamines, which we now think of as highly
addictive,

1781

1 would not be addictive either.
2 Q. I was just about to get to those points.
You
3 mentioned in the 1964 model that they used for
4 characterizing the smoking behavior, they did
look at
5 issues of intoxication, correct?
6 A. Yes.
7 Q. And concluded that smoking was not
intoxicative?
8 A. Yes.
9 Q. They looked at the issue of whether
smoking caused
10 anti-social behavior?
11 A. Yes.
12 Q. And concluded it did not?
13 A. Yes.
14 Q. And looked at whether it caused severe
withdrawal
15 when one quit and could you conclude it did not?
16 A. Well, withdrawal of a certain nature, they
really
17 were talking about life threatening withdrawal
symptoms,
18 such as occurs with heroin or alcohol, not
severity.
19 Because although nicotine withdrawal
is
20 different, many people think it's quite severe
with
21 respect to disruption of their lives. So, it's
not,
22 they are not going to have convulsions. But
they may not
23 be able to work right. They may not get along
with their
24 family and friends.
25 It can be quite disruptive. It's
not mild, but

1782

1 it's not life threatening in the same way as
having DTs
2 for alcohol withdrawal.
3 Q. And people who go on diets have to change
their diet
4 fundamentally. They can get irritable and hard
to live
5 with their family as well, different reasons but
they --
6 can't they?
7 A. But that is something that is well
described and has
8 a very clear neurochemical basis. For the diet
stuff,

9 there are other factors. It's not comparable.
10 Q. Now, after the definition and
characterizations and
11 habituation in 1964, Surgeon General discussed
and
12 characterized the nature of smoking from time to
time in
13 subsequent reports, correct?
14 A. Yes.
15 Q. And are you aware that in the 1979 report,
15 years
16 later the Surgeon General again referred to
smoking as an
17 habituation?
18 A. Yes; I believe that's correct.
19 Q. 15 years later?
20 A. Yes.
21 Q. And then in 1981, the surgeon general
referred to
22 smoking as a chemical habit; you are aware of
that, aren't
23 you?
24 A. I forget the exact dates, but I don't
contest that.
25 Q. And that was what, 17 years after the
initial report?

1783
1 A. Yes.
2 Q. And it was from '64 until 1988 when the
Surgeon
3 General formally changed the public health
services
4 characterization of smoking behavior?
5 A. Yes, but I would have to say that it
wasn't just an
6 isolated thing in the Surgeon General. The
scientific
7 community had also evolved from that habituation
to
8 dependence, even if in 1964 the World Health
Organization
9 began to talk about drug dependence focusing not
on
10 intoxication, and life threatening withdrawal
symptoms, but
11 loss of control over drug use, use of a drug to
personal or
12 social harm, all of the things that would fit
nicotine as
13 well under drugs.
14 So, by 1964 the World Health
Organization was
15 lumping tobacco with other drugs, such as
heroin and
16 cocaine, on those characteristics.
17 The Surgeon General in 1988 just
sort of caught
18 up with that and said this is really a
dependence and
19 analyzed it in a specific way, what's the
difference and
20 what's the same about nicotine versus other

drugs.

21 Q. Now, my question, though, is in terms of
the chief of
22 our public health service, Surgeon General,
correct?
23 A. Yes.
24 Q. It wasn't until 1988 that he formally --
or she, I
25 can't remember right now -- formally changed the
definition

1784

1 in a formal report, correct?
2 A. Yes, it was Dr. Koop; that was a he.
3 Q. Okay. Now, and the definition used in '88
is the one
4 that you described earlier on your direct
examination,
5 correct?
6 A. Yes.
7 Q. That did not include intoxication,
correct?
8 A. Correct.
9 Q. Or severe physical withdrawal symptoms of
the type
10 you just touched on?
11 A. Again, I don't like the word severe. I
would say
12 life threatening.
13 Q. Nothing about anti-social affects, et
cetera?
14 A. Correct.
15 Q. And all of those things I just mentioned
were part of
16 the classic definition used in '64, correct?
17 A. Yes, yes.
18 Q. Now, you are familiar with the American
Psychiatric
19 Association; are you not?
20 A. Yes.
21 Q. That's a prestigious and respected
scientific group?
22 A. Yes. It's the organization of
psychiatrists.
23 Q. And they published from time to time a
document known
24 as the diagnostic and statistical manual?
25 A. Yes.

1785

1 Q. DSM, it's known as?
2 A. Yes.
3 Q. This is a copy of it?
4 A. Yes.
5 Q. You probably have one?
6 A. Yes.
7 Q. And what this book does, in all of these
pages is
8 catalog and index the extraordinary variety,
shall I say,
9 of human mental conditions?
10 A. They index them and they try to set up
diagnostic

11 criteria for them.
12 Q. And it covers A to Z?
13 A. Yes.
14 Q. Anything that anybody would know of as a
mental
15 condition is in here, one way or the other?
16 A. More or less.
17 Q. And it was and they addressed drug abuse
and
18 dependency; do they not?
19 A. Yes.
20 Q. And have at various periods of time over
the years?
21 A. Yes.
22 Q. And indeed this has been revised a number
of times.
23 I'm holding up DSM 4, I don't know if you know
offhand when
24 that came out, looks like 1994, DSM 4, but there
was a DSM
25 1, 2, and 3 before that, correct?

1786
1 A. Yes.
2 Q. Now, it was not until 1980, was it doctor,
that the
3 American Psychiatric Association created a
diagnosis for
4 tobacco dependence?
5 A. I don't remember that date.
6 Q. And after the time in 1988 when the
Surgeon General
7 characterized smoking as an addiction, the
American
8 Psychiatric Association came out with DSM 4,
correct?
9 A. Yes.
10 Q. And DSM 4 characterizes tobacco as a
dependence,
11 correct?
12 A. Yes.
13 Q. They don't use the word addiction in this
book?
14 A. Yes, correct.
15 Q. And indeed they you talk in here about a
condition
16 that may be known as caffeine dependence,
correct?
17 A. Yes.
18 Q. And they even say that there is a
condition called
19 caffeine intoxication, correct?
20 A. Yes.
21 Q. Now, let's talk about that coffee issue
for just a
22 moment. Remember when we talked about the 1964
report,
23 Surgeon General said smoking was more like
caffeine and
24 that behavior than it was like morphine and that
behavior?
25 A. Yes, that's the, that's been found to be
totally

1787

1 wrong, but that's what they said in 1964.
2 Q. Now, you would agree that the
pharmacological effects
3 of cigarette smoking are more like caffeine than
like
4 cocaine, wouldn't you?
5 A. Well, they are different from both. If
you are
6 talking about intoxication, yes. If you are
talking about
7 dependence, nicotine is much closer to cocaine
than
8 caffeine. So, it depends what characteristic
you are
9 talking about.
10 Q. Okay. Doctors advise people to stop using
caffeine
11 because of some physical conditions it can
cause, right?
12 A. Yes.
13 Q. It can cause anxiety, it can cause
tachycardia, rapid
14 heart beat?
15 A. Yes.
16 Q. It can have some other reactions in the
cardiac
17 system, blood pressure, et cetera?
18 A. Yes.
19 Q. And some people don't follow that advice,
right,
20 because they like their caffeine?
21 A. Occasionally it has been my experience
that most
22 people, if you tell them to switch for decaf,
for example,
23 can do it. It's not -- it's not nearly the same
problem,
24 either health-wise or changing the behavior, to
get people
25 to switch to beverages without caffeine than it
is smoking.

1788

1 Smoking is just a whole order of
magnitude,
2 different issue in terms of how hard is it to
change
3 behaviors, and the consequences the health
effects of
4 caffeine are really trivial compared to
smoking.
5 THE COURT: Mr. Weber.
6 BY MR. WEBER:
7 Q. While we are looking for that, you have
written on
8 caffeine and its pharmacologic effect, have you?
9 A. I have.
10 Q. And you have concluded that using the
definition from
11 the 1988 Surgeon General's report one can
conclude that

12 caffeine is addictive, correct?
13 A. Well, it can be. But I also said that the
number of
14 people who are addicted are ten percent or fewer
of
15 caffeine users. And those are people who are
using 8 and
16 10 cups of coffee per day.
17 Q. Let me show you, doctor. This is an
article you
18 wrote on the clinical pharmacology of caffeine,
and I think
19 we have a 1990 date on that?
20 A. Yes.
21 Q. So that was after your work on the Surgeon
General's
22 committee in the 1988 report?
23 A. Yes.
24 Q. And you yourself in this article ask the
question is
25 caffeine addictive, correct?

1789

1 A. Yes.
2 Q. And you concluded that you were going to
use the
3 criteria that the Surgeon General had used,
correct?
4 A. Yes.
5 Q. And you said the three major criteria are
6 psychoactivity, drug reinforced behavior, and
compulsive
7 use, correct?
8 A. Yes.
9 Q. And you said caffeine, that caffeine
reinforces has
10 been demonstrated?
11 A. Yes.
12 Q. And then you went on to include the
development of
13 tolerance, physical dependence and intense
desire; do you
14 see that?
15 A. Yes.
16 Q. And then you ended up saying there is a
group of
17 coffee drinkers who appear to meet the addiction
criteria,
18 correct?
19 A. Right, but that group is small. It's ten
percent,
20 and it's not associated with any significant
health issues,
21 really. There are a few people who have
problems, so that
22 the magnitude of addiction problem is less and
the
23 implications of it are totally different.
24 Q. How many people, how many Americans does
that ten
25 percent of coffee addicts represent?

1790

1 A. I would say 10 percent at most. I don't
have the
2 numbers, it was actually hard to get this. But
the people
3 who are addicted to caffeine are the ones who
are smoking
4 coffee all day long.
5 Q. Drinking?
6 A. Sorry, excuse me, drinking coffee all day
long. And
7 find that they can't go a day without coffee,
that they
8 have severe headaches, that they have severe
withdrawal
9 symptoms.
10 There are people like that, but I
think it's
11 many fewer than ten percent of the population.
I've not
12 been able to get data. I fully tried to get
that on the
13 population as a whole, but it's a small
segment.
14 It's not the 80 percent of cigarette
smokers
15 who are dependent. And it's also not
associated with a 1
16 and 2 or one in 3 chance of dying prematurely
as a
17 consequence of the use of the drug. So, the
issues around
18 it are totally different.
19 Q. Let me ask this, because I think I'm
confused on
20 this. And if you could answer it yes or no, I
would ask
21 that you would. But if you can't, answer it as
you have
22 to.
23 Are you saying that on the issue of
addiction,
24 that the, that one thing you consider are the
risk of
25 smoking or the risk of caffeine to health? Is
that, does

1791

1 that go into the mix or does it not?
2 A. Not in terms of the definition of
addiction.
3 Q. That's what I thought?
4 A. But in terms of what you, how much you
care about it
5 it does. I mean, I don't care if a drug is
addicting or if
6 it doesn't hurt anybody, fine. But I do care if
it kills
7 them. So that's my response to addiction.
8 Q. Now, back on the criteria you are using,
you refer to
9 some of these criteria as minor, correct?
10 A. Yes.
11 Q. And it is your position that tolerance, et

cetera,
correct?
these are
not the core
And so these
addiction.
caffeine and
aren't they?
down to
control, which
you wrote

12 are minor criteria in examining addiction,
13 A. Yes. Yeah, those by minor it's meant that
14 characteristics that are often present but are
15 issue is really loss of control of drug use.
16 are things that are often present in drug
17 Q. And if they are minor criteria for
18 coffee, they are minor criteria for smoking,
19 A. Yes.
20 Q. You are not applying a double standard?
21 A. That's correct.
22 Q. So, the major criteria really is and comes
23 that issue you mentioned before, loss of
24 implies it's hard to quit. That's exactly what
25 in your expert report, right?

1792
That it
researcher in this
aspects of
very mild
medical aspect of
like me to
mean, I
his opinions
people, some
that's not what
to him

1 A. Yes.
2 Q. And that hasn't been any secret, has it?
3 may be hard to quit?
4 A. No; that's not a secret.
5 Q. Dr. Henningfield, he's a respected
6 area, isn't he?
7 A. Yes.
8 Q. He's been a collaborator of yours?
9 A. Yes.
10 Q. Hadn't Dr. Henningfield said that clinical
11 quitting, tobacco withdrawal, if you will, are
12 quote unquote compared to other substances?
13 A. Well, I think he's referring to the
14 withdrawal.
15 Q. Is that what he said though, would you
16 display the article or do you recollect that?
17 A. I recall, but from what you read to me, I
18 know Dr. Henningfield very well. I know what
19 are. And I know that he understands that some
20 people's lives are severely disrupted by tobacco
21 withdrawal.
22 And so whatever he says there,
23 his current thought is. I can tell you I talk
24 frequently.
25 Q. But you don't doubt that he has written

that

1793

to

you are

have to

Do you

withdrawal or

the nature of

necessarily

because

pretty

who are

they

can't

again, and

work their

disruption that

smoking,

that's severe.

example, doctor.

centuries, as

1794

looking at

something. It's

I just quit

other

jobs.

have been

1 withdrawal, if you will, is very mild compared
2 withdrawal from opiates, sedatives, and alcohol?
3 A. Well, clearly. And I agree with him if
4 talking about from a medical perspective, you
5 hospitalize someone for nicotine withdrawal, no.
6 have to hospitalize someone for barbiturate
7 alcohol withdrawal? Yes.

8 That's where it's much different,
9 it is different. But the disruption is not
10 different. Some smokers can't work for months
11 they can't concentrate on their jobs. That's
12 major.

13 Q. Take months off work?

14 A. Not necessarily, but I can tell you people
15 writers, who have always smoked a cigarette when
16 write, and then they stop smoking and they can't
17 concentrate on their job, they can't write, they
18 focus, they pace around, they can't get going
19 they relapse to smoking because they need to
20 job.

21 That's an example of a severe
22 occurs. And people know that they shouldn't be
23 but they need to smoke to do their job, and
24 that's severe.

24 Q. I don't mean to make little of that

25 But isn't it fair to say that writers for

1 long as people have been writing, have been
2 excuse for writer's block. It's always
3 the noise in the apartment upstairs. It's just
4 smoking; it's I can't get coffee?
5 A. Well, that's probably true, but there are
6 people who have problems concentrating on their
7 Especially when they have been using, when they
8 smoking with their work for a long time and have

trouble
9 focusing for quite a while after they stop
smoking.
10 I don't think. So, it should be a
trouble with
11 job performance is an important reason why
people relapse
12 to cigarette smoking.
13 Q. Let me finish up this area between
similarities
14 between smoking and other behaviors.
15 One other difference between smoking
and some
16 of these other things you have mentioned is
that our
17 society treats the cigarette as a legal
product, correct?
18 A. Yes.
19 Q. You mentioned that on direct; didn't you?
20 A. Yes.
21 Q. And it's not only legal to market and for
people to
22 buy, but it's legal to advertise and sell as
long as it's
23 got the congressional warnings on it?
24 A. Yes.
25 Q. And even more government here has chosen
to make

1795

1 cigarettes a revenue source?
2 A. Yes.
3 MR. COUGHLIN: I object, your Honor.
4 THE COURT: You mentioned the cost
of smoking
5 earlier.
6 MR. COUGHLIN: I didn't mention
about the cost.
7 Were looking '58.
8 THE COURT: It's beyond the scope of
the
9 direct. I don't know how far you were going to
go on
10 this.
11 MR. WEBER: I just had two more on
this.
12 THE COURT: I'll permit it other
than fly the
13 witness back from California for the
defendant's case.
14 BY MR. WEBER:
15 Q. Do you know that here in Ohio that we have
state tax
16 on cigarettes?
17 A. I assumed Ohio did.
18 Q. And it finances public works, stadiums,
it's one of
19 the primary sources here?
20 A. I don't know what it's used for.
21 Q. But that's a difference in the way society
treats
22 smoking and cigarettes, correct?
23 THE COURT: That's three questions.

24 MR. WEBER: Okay, I withdraw that
one.
25 Q. Now, are you aware that even before the
report you
1796
1 worked on, the '88 report came out, doctor, that
there was,
2 there were some statements Dr. Koop had made to
the media,
3 to the press in which he expressed his personal
opinion
4 that smoking was addictive?
5 A. I know there were press releases. I don't
recall
6 specifically which ones you are talking about.
7 Q. And do you, do you know that at different,
well, let
8 me strike that. Let me ask you if you have seen
this, this
9 is Exhibit AIW 1287.
10 And this is a document the
government of
11 Canada, the Canadian, from the Canadian
Director General
12 Drug Director; do you see that?
13 A. Yes.
14 Q. And the date on this document is, if we
look at least
15 on the stamp there, May, 1986?
16 A. Yes.
17 Q. And it references how in this middle
paragraph how
18 Surgeon General Koop?
19 MR. COUGHLIN: I object, your Honor;
this is
20 hearsay.
21 THE COURT: I'm not sure what the
question is.
22 MR. WEBER: I'm not offering it for
the truth,
23 your Honor. I'm offering it solely for the
fact that the
24 expression by Dr. Koop, his opinion was not
universally
25 accepted. I'm not arguing about what the
substance was

1797
1 either way. Simple for the fact it was said.
2 THE COURT: I'll deny the objection.
And I
3 instruct the jury it's not offered for the
truth. It's
4 offered for the issue as to whether or not --
it's not
5 offered to the truth at whether smoking is
addictive. It
6 is offered for the truth there is some debate
on the
7 issue.
8 BY MR. WEBER:
9 Q. And does this indicate to you, Dr.

Benowitz, that
10 there was at least some dispute at least in 1986
among some
11 people in the field as to whether addiction was
the proper
12 word to characterize smoking?
13 A. Yes, this really relates to the same thing
we talked
14 about before, about whether the addiction should
include
15 intoxication and life threatening withdrawal
symptoms.
16 Q. Now, and would you say it's fair to say
that, at
17 least as of 1986, reasonable people could have a
difference
18 of opinion as to whether or not addiction was
the proper
19 term to characterize smoking?
20 A. Well, as you said before, the behavior was
never
21 questioned. Some people felt that addiction
requires
22 intoxication and withdrawal. Some people think
dependence
23 is a better term. From my point of view, it
doesn't really
24 matter at all everyone understand what addiction
means,
25 they understand the loss of control of issue. I
think it's

1798
1 really moot in terms of what it's called.
2 Q. Isn't it fair to say, doctor, and you have
said
3 before, that the science is out there, and has
been, and
4 the precise name you put on it isn't the issue
as long as
5 you recognize that smoking can be difficult to
quit?
6 A. That's correct.
7 Q. And are you familiar that the President of
the
8 British medical association, even in 1996, has
expressed
9 the viewpoint that he doesn't accept the notion
of
10 addiction; he doesn't use that term?
11 A. I'm not familiar specifically with that.
12 Q. It wouldn't surprise you though, would it?
13 A. No.
14 Q. Because scientists can in good faith still
disagree,
15 they may accept the behavior, but they still
disagree about
16 the precise term used to characterize the
behavior, fair
17 enough?
18 A. There are some scientists who like
dependence better,
19 but I think the terms, both terms are well

understood.

20 Q. Indeed, Dr. Benowitz, isn't it true that
even after
21 you were the editor of the 1988 Surgeon
General's report
22 that used the word addiction, even after that,
you yourself
23 expressed the position that you would stay away
from the
24 term addiction before a jury or at a trial
because it was
25 such a loaded term; haven't you said that? Even
after the

1799

1 report?
2 A. I'm not sure of the exact words, but I
believe that
3 that I've even changed my own view over time
from the point
4 of view that the addiction concept carries
information
5 about the strength of the behavior. Sometimes
dependence
6 doesn't do that.
7 Now, I do agree that it has to be
qualified,
8 and if I say something is addicting I don't
want someone
9 to think I'm talking about anti-social behavior
or
10 anti-intoxication or severe withdrawal
symptoms.
11 But I want to communicate the
strength of the
12 behavior. And I think that in some cases it's
actually
13 the public understands it better as addiction
than
14 dependence.

15 I don't doubt that I said what you
said I --
16 what you say, but now I don't hold that exact
view. I
17 think I would change it slightly.

18 Q. But you acknowledged that in 1989, after
you worked
19 on the Surgeon General's report, you testified
that you
20 wouldn't use the word addiction in front of a
jury because

21 it was a loaded and confusing term, correct?
22 A. I'm sure I did. I'm sure you have my
testimony.

23 Q. Would you like to see it?

24 A. I believe you.

25 Q. Now, and it's true that different people
understand

1800

1 the word addiction to mean different things,
correct?

2 A. Yes and no. I think people generally

understand
behavior, 3 addiction to deal with loss of control over some
understanding. 4 in terms of public understanding or general
mean is hard 5 Q. When you say loss of control, what you
6 to quit, hard to abstain?
7 A. Or hard to change, whatever it is.
8 Q. And indeed lay people, people on the
street, people 9 like me with no scientific training, other
people, they 10 refer to lots of things as addictive now, don't
they?
11 A. Yes.
12 Q. You hear about exercise, you hear about
people a 13 addicted to gambling, shopping, golf, whatever,
video 14 games, right?
15 A. Yes, what I think is important though is
separate out 16 compulsive behaviors, which is what you are
talking about, 17 from drug addictions because drug addictions are
specific 18 things maintained by different drugs.
19 And it's different from exercise
addiction or 20 love addiction. It's different than whatever
one does in 21 their life. Again, I come back to no one ever
needs to 22 have nicotine in their body. Once they get it,
they have 23 a hard time doing without it. That's the issue
for drug 24 addiction.
25 Q. So, at least there is a lot of confusion
out there

1801
1 about the term addiction, correct?
2 A. I don't think there is confusion. I think
most 3 people understand you are talking about a
compulsive 4 behavior.
5 Q. Something hard to quit?
6 A. Yes.
7 Q. And even then, not only could you, in 1989
say that 8 it's too loaded a term, you preferred not to use
it, but to 9 use other terms, other people can hold that
viewpoint 10 reasonably too, correct?
11 A. Sure.
12 Q. Even today?
13 A. Yes.
14 Q. Now, let me move to a different topic now
if I could.

cigarette
of the
right?
nicotine
Surgeon
can get
that help or
right?

15 Talk about, I want to talk about some of the
16 design issues you addressed on direct and some
17 documents from my client R.J. Reynolds, all
18 A. Yes.
19 Q. Now, you talked about reduction in tar and
20 over the years; did you not?
21 A. Yes.
22 Q. And let me show you page 88 from the 1989
23 General's report. I'm just trying to see if I
24 another 1 latch on to help that at all. Does
25 make it worse. Worse? Okay. I think you are

1802

on the
paper?
General's report,
the years,
being the top
the years,
General as
tobacco?

1 A. I can see it.
2 Q. Can you see that all right, doctor?
3 A. Yes.
4 Q. If not, you might want to look over there
5 right or you can, I'll hand you a piece of
6 A. I know this figure well.
7 Q. Now, what this does, in the Surgeon
8 is it talks about different design changes over
9 correct?
10 A. Yes.
11 Q. And the effect on tar and nicotine, tar
12 line, nicotine being the bottom, correct?
13 A. Yes.
14 Q. And it shows how they have gone down over
15 correct?
16 A. Yes.
17 Q. And among the factors cited by the Surgeon
18 having an effect on that, are reconstituted
19 A. Yes.
20 Q. Porous paper?
21 A. Yes.
22 Q. Expanded tobacco?
23 A. Yes.
24 Q. And ventilation, correct?
25 A. Yes.

1803

are sales
often look at

1 Q. And these numbers here, by the way, these
2 weighted numbers, correct?
3 A. Yes.
4 Q. And isn't that the way that researchers
5 the drop in tar and nicotine as a sales weighted

average?

6 A. Yes.

7 Q. And sales weighted average, what that
means, doctor,
8 is not that all cigarettes are on the these
lines, but that

9 there are some above and some below, correct?

10 A. Yes.

11 Q. And this line gets plotted where it is,
based on the

12 number of sales that are made for middle, high
or low

13 delivery cigarettes?

14 A. Yes, although it's, it's done with a
specific yield

15 numbers; but yes, the idea is correct.

16 Q. And, for example, you know as a researcher
in that

17 area, that in this period moving into the late

80's, et
18 cetera, there are some cigarettes that are sold
with

19 measured yields down near the bottom, correct?
20 A. Yes.

21 Q. But they are not reflected on this because
that's a

22 sales weighted average?

23 A. Right.

24 Q. Would you agree with me that the numbers
on a sales

25 weighted average are determined not only by what
cigarettes

1804

1 are in the marketplace but what consumers choose
to buy?

2 A. Yes.

3 Q. And if consumers choose to buy a lot of
high tar,

4 that number goes up, and if they choose to buy
low tar,

5 doctor, that number goes down?

6 A. Yes. It depends on what they choose to
buy.

7 Q. And there have been sales way down low and
at the

8 bottom, and if consumers buy with a lot of tar,
and the

9 consumers buy large amounts, those would go back
up?

10 A. I understand they don't buy a large
amount.

11 Q. I understand your understanding of the FTC
method,

12 good method or not. Right now, I want to accept
the

13 measurements on that and ask some questions,
okay?

14 A. Yes.

15 Q. I'm sorry, you would agree that reducing
tar and

16 nicotine as a design matter was encouraged by
our

17 government and by the public health community,
correct?
18 A. Yes.
19 Q. And in your opinion, as well, those were
right minded
20 efforts, generally, correct?
21 A. Yes.
22 Q. And you would agree that smokers who did
not or would
23 not quit, would be well advised to smoke lower
yield
24 cigarettes, correct, if they didn't or wouldn't
quit?
25 A. Yes, I think they should, I think they
should be told

1805
1 how not to oversmoke them, but yes, they should
smoke lower
2 yield cigarettes.
3 Q. And these design measures we saw here,
that brought
4 about these reductions, those were all put in
place as
5 inventions by the American cigarette industry,
correct?
6 A. Yes.
7 Q. And you give the companies credit for
those
8 inventions, don't you?
9 A. Yes.
10 Q. You don't think they are wasting their
time, correct?
11 A. No, I think they could be more effective
if they told
12 consumers how to make use of them properly, but
I don't
13 think it's a waste of time.
14 Q. Indeed there is even one invention on here
that had a
15 big impact that didn't even make the Surgeon
General chart,
16 correct, filters?
17 A. That's right.
18 Q. And that brought that line down even more,
correct?
19 A. Yes.
20 Q. Now, and you know that there have been
reports in the
21 published scientific literature, 70's, 80's,
even 90's,
22 doctor, that say that reduced delivery
cigarettes do in
23 fact reduce risk. Those publications have been
out there,
24 correct?
25 A. Referring mostly to comparisons of filter
versus

1806
1 non-filtered cigarettes, not with respect to the
range of
2 modern cigarettes.

-- deliver
are talking
have tar
almost 3
are still
compared to
never seen any
lower these
right now;
that the
cigarette
time that
but that the
decreased,
1807
only was
issue, just
animals on the
Michael
study of
on
addictive,

3 Q. But the reports are out there that reduce
4 reduced risk, correct?
5 A. You have to be specific about this. You
6 about reducing numbers in the '50's. You could
7 numbers of 40 milligrams and nicotine numbers of
8 milligrams.
9 And then when you add filters, you
10 dealing with cigarettes that are quite high
11 modern cigarettes with a lower risk. I've
12 data comparing when filter cigarettes -- that
13 numbers had made any difference.
14 Q. There is epidemiology on that is going on
15 is there not?
16 A. Yes.
17 Q. And the Surgeon General in 1981 concluded
18 risk of lung cancer had decreased because of
19 design modification, correct?
20 A. Yes, again due to filtration.
21 Q. And the Surgeon General concluded at the
22 not only had the amount of tar been decreased,
23 toxicity of tar on a gram per gram basis had
24 correct?
25 A. Yes.

1 Q. So that what he concluded in 1981, was not
2 there less tar, but if you put aside the less
3 look at the tar itself; it was less toxic to
4 animal studies, right?
5 A. Yes.
6 Q. Now, you are familiar with the work of Dr.
7 Russell, correct?
8 A. I am.
9 Q. He is a pioneer, as you have said, in the
10 nicotine addiction?
11 A. Yes, and a personal friend.
12 Q. And he is one who has written for decades
13 addiction?
14 A. Yes.
15 Q. And he's firmly convinced that smoking is
16 correct?
17 A. Yes.

18 Q. Now, Dr. Russell has made any number of
suggestions
19 over the years in published peer review
literature about
20 what ought to be done in designing cigarettes,
correct?
21 A. Yes.
22 Q. And he has examined cigarette design
issues; has he
23 not?
24 A. Yes.
25 Q. And are you familiar with a statement by
Dr. Russell

1808
1 that was given at the Second European Council,
Smoking and
2 Society in 1978, in which Dr. Russell said, at
the risk of
3 being hounded out of the conference, I'm going
to suggest
4 that over the past 20 years the tobacco industry
may have
5 achieved more in reducing smoking related
disease than we
6 have. This is because they focused their
efforts on making
7 cigarettes safer?
8 A. No; I've never seen that quote before.
9 Q. Now, one factor of significance in
cigarette design
10 is whether or not smokers will accept the
product, correct?
11 A. Yes.
12 Q. Reynolds learned that with Premier. They
didn't
13 accept it, right?
14 A. Yes.
15 Q. So, unless the government is to come in
and say that
16 only one cigarette or one type of cigarette or
one set of
17 cigarettes can be made, the success of a new
design will
18 depend on whether or not consumers want them?
19 A. Yes.
20 Q. Now, there are some governments that have
put
21 restrictions on how cigarettes can be designed,
right?
22 A. Some governments have put restrictions on
upper
23 limits of yields.
24 Q. We haven't done that here yet?
25 A. No.

1809
1 Q. Now, on the FTC method, you mentioned that
it never
2 was intended to reflect an actual human smoker?
3 A. Not an individual smoker.
4 Q. Not an individual smoker and the FTC
informed the

being 5 public of that with the announced the test as
6 required?
7 A. Yes.
the FTC as 8 Q. And the tobacco companies had written to
9 part of that process, telling them that just in
case the 10 FTC didn't know it itself, right?
11 A. Right. But I have to say it was intended
though to 12 give some idea of relative exposure for
different kinds of 13 cigarettes for populations of smokers, and
that's why it 14 was developed.
15 Q. And indeed you are familiar with the
independent 16 committee on smoking and health in England?
17 A. Yes.
Commission, 18 Q. The so called Froggatt Commission, Hunter
19 whatever?
20 A. Yes.
league 21 Q. That commission requires what they call
22 tables, L-E-A-G-U-E?
23 A. Yes.
24 Q. And what the league tables are the same
thing as our 25 FTC numbers here?

1810
1 A. Yes.
correct? 2 Q. They require publication of those numbers,
3 A. Yes.
4 Q. And they have said that while there is a
lot to 5 criticize about those numbers, nonetheless they
give them 6 information to consumers on relative rankings
from top to 7 bottom, right?
8 A. Yes.
9 Q. And you know that the companies here in
America are 10 required to put those FTC test numbers on each
and every 11 advertisement they have?
12 A. Yes.
13 Q. That if they didn't do that, they would be
violating 14 the law?
15 A. Yes.
16 Q. They are not free to come up with some new
tests? 17 A. Correct.
18 Q. Themselves?
19 A. Correct.
20 Q. In other words, if you had went in a dark
room with 21 some scientist and came out a month later with

an
could
government

22 absolutely perfect test that no one in the world
23 criticize, they still couldn't use it until the
24 said they could; is that right?
25 A. That's correct.

1811

the FTC test
R.J. Reynolds.
method were
conference?
has it?
to suggest
tar and
was that
reduction
public health
disease came
correct?
the

1 Q. There were meetings what back in '94 on
2 method? You were an invitee in that?
3 A. Yes.
4 Q. Along with some of the scientists from
5 A. Yes.
6 Q. And the pluses and minuses of that FTC
7 discussed in 1994 by various people at that
8 A. Yes.
9 Q. And FTC has not yet changed that method,
10 A. That's correct.
11 Q. Now, in the 1970's, some researchers began
12 that it didn't make sense to keep reducing both
13 nicotine, correct?
14 A. Yes.
15 Q. And indeed what some researchers suggested
16 tar reduction ought to continue, but nicotine
17 shouldn't, right?
18 A. Yes.
19 Q. And the theory underlying that was a
20 theory, correct? The theory was that whatever
21 from cigarettes largely came from the tar,
22 A. Yes.
23 Q. But that people tended to smoke because of
24 nicotine. That was the theory, right?
25 A. Yes.

1812

that had
the tar?
things you
the tar to
the level

1 Q. So, the theory was to produce cigarettes
2 a certain level of nicotine and keep reducing
3 A. Right.
4 Q. And that's called, I mean, there are many
5 can call it. One thing it's called is breaking
6 nicotine ratio, right?
7 A. You could call it that.
8 Q. Okay. In other words, they were reducing
9 of tar per unit of nicotine?

10 A. Yes.
11 Q. Premier was an example of a cigarette like
that,
12 right?
13 A. Yes.
14 Q. You actually agree with that concept,
correct?
15 A. Yes.
16 Q. And Dr. Russell was one of the ones who
wrote and
17 spoke about that, correct, this issue of
maintaining
18 nicotine and limiting tar?
19 A. Yes, he, he advocated it a lot. Actually,
my own
20 point of view is somewhat different than that in
terms of
21 what I think policy should be for the future.
22 I think in fact nicotine should be
reduced
23 gradually over time to make cigarettes not
addictive but
24 that nicotine be made available to people in
other sources
25 so they don't to over smoke cigarettes.

1813
1 Q. Your position, to be fair, doctor, is that
the
2 government ought to regulate the level of
nicotine and
3 limit it to a very, very narrow range and
require it to be
4 reduced over time?
5 A. Yes, I think based on what's known about
addiction
6 that cigarettes should be non-addictive so that
people
7 really do have a choice as to whether to smoke
or stop
8 smoking.
9 Q. So, your position the Government should
limit what's
10 legal to sell for cigarettes and over time the
nicotine
11 ought to be removed completely, right?
12 A. Not completely. I think it should be
brought to the
13 point where cigarettes are available, but they
are not
14 addictive, and that nicotine for people who are
addicted
15 should be provided in safe forms that don't
cause serious
16 disease, and that that should be coordinated by
a health
17 agency, such as the Food and Drug Administration
Drug
18 Administration that could really assess the
policy over
19 time, make sure that it's doing what it's
supposed to do,
20 make sure it's not having any adverse affects

and regulate

21 it, just like it regulates other drugs.

22 Q. And is it part of your vision of the
future if it

23 were up to you that cigarettes would be
available only by

24 prescription?

25 A. No, not necessarily. I think that
cigarettes should

1814

1 just not be addictive, and so people can really
when they

2 want to stop smoking, can stop smoking. That's
the choice

3 that I want the smoker to have.

4 Q. Well, people can stop smoking. You have
told us that

5 earlier. You just want to make it easier for
them?

6 A. Yes.

7 Q. Is that fair?

8 A. I would like to make it so that people who
have a

9 heart attack and should stop smoking more than
50 percent

10 can stop smoking.

11 Q. Have you done a study on how many people
after heart

12 attacks stay away from red meat, eggs, butter,
olive oil?

13 A. No.

14 Q. Now, you know that these recommendations
that came

15 from the public health community about
maintaining nicotine

16 and reducing tar, those were researched by these
companies,

17 weren't they?

18 A. Yes.

19 Q. They were researched by people outside the
companies

20 and by people inside the companies, correct?

21 A. Yes.

22 Q. And that was a reasonable and responsible
for things

23 for these companies to do to do research along
that

24 recommended line, right?

25 A. Yes.

1815

1 Q. Now, on direct exam, you talked about a
memorandum

2 the ladies and gentlemen of the jury have seen
several

3 times before. And that was a memorandum by

4 Claude Teague
about the crucial role of nicotine, right?

5 A. Yes.

6 Q. You remember discussing that on direct?

7 A. Yes.

8 Q. And this memorandum was, it's got a date

of 1972; do

9 you see that?

10 A. Yes.

11 Q. Now, did, and Dr. Teague expressed a view
some point

12 in here, he said somewhere that if nicotine is
the sine qua

13 non of tobacco, then certain things follow,
correct?

14 A. Yes.

15 Q. And he then went on, he said he didn't
have data, but

16 he then went on to suggest maintaining nicotine
at

17 a certain level and continuing to reduce tar,
correct?

18 A. I've seen different ones of his documents.

I don't
19 remember. I would have to take a look at it to

confirm
20 what you said.

21 Q. Okay. For example, he says, and again,
there are a

22 lot of ifs here, but let's start on the top one.

23 If our business is fundamentally
that of

24 supplying nicotine in useful dose form, why is
it really

25 necessary to have allegedly harmful tar
accompany it?

1816

1 There should be a legal way to do it.

2 A. Yes.

3 Q. And down below, I know it's hard to read
this, with

4 the production here. He says, it should then be
possible

5 using modifications, et cetera, to deliver the
nicotine to

6 the user in efficient and effective attractive
doses

7 accompanied by no tar; correct?

8 A. Yes.

9 Q. What he's talking about here, he's saying
if the

10 reason is nicotine, the reason people smoke, we
ought to be

11 researching reducing tar, maintaining some level
of

12 nicotine, correct?

13 A. Correct. He does state in that document
in some

14 places strongly that because if nicotine is why
people

15 smoke, but I do agree with what you have just
said now.

16 Q. And he refers on the first page, doesn't
he, doctor,

17 to the habituated user?

18 A. Yes.

19 Q. Okay. And he does also say, just so we
are clear, he

20 does say if nicotine is the sine qua non of
tobacco, right,

21 in that portion?

22 A. He says different things, and without
having the

23 whole document I can't put this in proper
balance, in terms

24 of when he says nicotine definitely is and when
he says

25 if -- it's hard to comment where you have shown
me just one

1817

1 sentence.

2 Q. Just so we all know, sine qua non, without
getting me

3 in my attempt to translate Latin, that is the
essential

4 element, without which you would not have such a
thing,

5 correct?

6 A. Yes.

7 Q. You looked at a number of Dr. Teague's
documents?

8 A. Yes.

9 Q. And those were provided to you by counsel
in this

10 case or some other case, correct?

11 A. Yes.

12 Q. Have you reviewed Dr. Teague's
depositions?

13 A. No.

14 Q. Would it be of any interest to you
whatsoever, any

15 interest to know what Dr. Teague himself has had
to say

16 about this document, what he was thinking, and
what he was

17 doing at that time?

18 A. I would be curious. I think his
statements are

19 pretty clear. But I'm interested just because I
have read

20 so many of his statements. I would be
interested to know.

21 Q. You would be interested to know what Dr.
Teague

22 himself had to say?

23 A. Yes.

24 Q. And you weren't provided that deposition
in this or

25 any other case?

1818

1 A. No.

2 Q. Do you know how many deposition he's
given?

3 A. I have no idea.

4 Q. To your knowledge, was Dr. Teague a
nicotine

5 researcher?

6 A. I think he was involved with research
direction. I'm

himself. 7 not sure whether he was a researcher or not
Dr. Teague 8 Q. So, it wouldn't surprise you to find out
9 never had done research on nicotine?
10 MR. COUGHLIN: I object. If he has
a question 11 for Dr. Teague, he can bring them in.
12 MR. WEBER: I have a good basis for
this 13 question; it is cross.
14 MR. COUGHLIN: I don't think so,
your Honor. 15 THE COURT: Well, I'll ask you to
rephrase the 16 question.
17 MR. COUGHLIN: He, if he's got
anything Dr. 18 Teague said, he can bring him in and we can all
see him. 19 MR. WEBER: I'm not asking what Dr.
Teague 20 said.
21 THE COURT: He's answered the
question. Were 22 you going to need to rephrase. He's answered
generally 23 what interest he would have in terms of his
position. 24 Q. Now --
25 THE COURT: If you want to rephrase
the

1819

1 question.
2 BY MR. WEBER:
3 Q. I'm sorry, judge. I didn't mean to talk
over you. 4 With this fan here I have a hard time hearing
sometimes. 5 Do you know whether Dr. Teague was or wasn't a
behavioral 6 scientist?
7 A. I don't know anything about Dr. Teague
other than his 8 position as a research director.
9 Q. And do you even know that was his
position, research 10 director?
11 A. I don't recall the exact title. But I
think he was 12 involved in research direction of some sort.
13 Q. To be fair, you don't know his title?
14 A. You know, I have heard his title before.
I have read 15 it before. But I've forgotten it because there
are so many 16 different documents and titles.
17 Q. And you don't know whether he fit in the
hierarchy of 18 the Reynolds research department?
19 A. That's correct.
20 Q. Or whether he supervised anyone or not?

21 A. That's correct.
22 Q. Now, would you agree with me that this
memorandum of
23 Dr. Teague that you talked about on direct,
contained
24 within it no scientific experimental results or
data
25 points?

1820

1 A. Well, as I recall, I'm not looking at it
now, but as
2 I recall, it was really his interpretation of
the science.
3 Q. And you think that Dr. Teague was right,
that his
4 proposals that we have been talking about, about
reducing
5 tar and maintaining a level of nicotine, you
think that was
6 a sensible recommendation?
7 A. Depending on the goals, but within the
framework,
8 framework of conventional cigarettes, I think it
was
9 reasonable.
10 Q. And it's fair to say, and you would agree,
wouldn't
11 you, that Dr. Russell would probably agree with
the ideas
12 Dr. Teague and recommendation he's making there?
13 A. Yes.
14 Q. And these ideas that Dr. Teague is talking
about
15 here, are essentially the same thing that Dr.
Russell and
16 others were saying in the literature during the
same time
17 period, right?
18 A. Yes.
19 Q. And indeed, this 1981 Surgeon General's
report
20 recommends this very same kind of research,
doesn't it?
21 A. Yes.
22 Q. Let me show you this from page 185 and 186
of the
23 1981 Surgeon General's report, doctor, get you
down at the
24 bottom here.
25 A probable outcome of the behavioral
research

1821

1 will be that nicotine is the primary
pharmacological
2 reinforcer for cigarette smoking.
3 It says probable outcome?
4 A. Yes.
5 Q. It almost makes it sound like nicotine is
a sine qua
6 non?
7 A. Yes.

8 Q. It says, if this prediction is correct, a
lower tar
9 and nicotine cigarette that will be used by
smokers that
10 will minimize the exposure to other toxic
exposure to other
11 toxic components of smoke may require
substantial yields of
12 nicotine?
13 A. Yes.
14 Q. And that's the same thing Dr. Teague's
talking about?
15 A. Yes.
16 Q. And Dr. Russell and others were talking
about at that
17 very same time?
18 A. Yes.
19 MR. WEBER: I'm moving to a slightly
different
20 topic. I don't know what the court's --
21 THE COURT: I've got to sentence
someone at
22 12:30, so why don't you take about 10 minutes.
23 MR. WEBER: Ten more minutes?
24 THE COURT: Yes.
25 Q. Now, you are familiar with the literature
that's out

1822
1 there in the scientific published literature
about using
2 research on smoke pH as a means of maintaining
nicotine
3 impact while reducing tar, are you not, sir?
4 A. Yes.
5 Q. In other words, the theory is, in the
published
6 literature, that it might be a good idea to
research design
7 methods that maintained nicotine impact in the
mouth and
8 throat but had a lower tar cigarette?
9 A. Yes.
10 Q. And again, the theory on that is the same
one we were
11 talking about a moment ago, theory was to keep
nicotine at
12 some level, reduce tar?
13 A. Yes.
14 Q. And the reason that theory came out, keep
nicotine at
15 some level reduce than tar is, because it was
felt to be
16 consumer acceptable a cigarette had to have some
level of
17 nicotine?
18 A. Yes.
19 Q. And Philip Morris learned that the hard
way, they
20 sold the Next cigarette and it was a big
failure, the
21 de-nicotined cigarette?
22 A. I suppose you could say that I'm not sure

why they

23 marketed the Next or what they tried to do with
it, but it
24 did fail.
25 Q. And, you know, when Philip Morris marketed
a

1823

1 cigarette that had no nicotine, they were
criticized by the
2 public health community as well, correct?
3 A. I don't recall that. It's possible, I
just don't
4 recall it.
5 Q. Now, are you familiar with the Elson &
Betts article
6 from the 1972 Journal of the National Cancer
Institute?
7 A. Which one is that.
8 Q. It's an article entitled, sugar content of
tobacco
9 and pH of smoke in relation to lung cancer risk
of smoking?
10 A. Yes, I have read that.
11 Q. And that's in the Journal of the National
Cancer
12 Institute '72; that same year of the Teague
memo, correct?
13 A. Yes.
14 Q. And one of the suggestions made in the
Elson & Betts
15 article was that by adjusting pH one could
affect the risk
16 of smoking, correct?
17 A. Yes.
18 Q. And articles at that time talked about one
method of
19 changing pH being a method in which alkaline
substance goes
20 were added to the tobacco, correct?
21 A. Yes.
22 Q. And alkaline substances would include
ammonia?
23 A. Yes.
24 Q. Anything else that's basic?
25 A. Yes.

1824

1 Q. And you are familiar also with an article,
I take it,
2 in Science, in 1976 -- Science, by the way, is
one of the
3 world's leading scientific journals is it not?
4 A. Yes.
5 Q. Low risk cigarettes, a prescription?
6 A. Yes.
7 Q. And you are familiar with this article
where it
8 talked about the very theory that you have been
talking
9 about today? And it was expressed in some of
these
10 memoranda of Dr. Teague and others you have been

looking
11 at.
12 It says, within certain value ranks
high levels
13 of nicotine, high smoke pH values, and high
ratios of
14 unprotenated nicotine -- let's stop right
there. But you
15 mentioned that quickly on direct, unprotenated
nicotine is
16 free nicotine?
17 A. Correct.
18 Q. Protенated is the bound nicotine, or the
kind that
19 appears and remains in the particle?
20 A. Yes.
21 Q. Fair enough.
22 Notes that high level, high smoke pH
increases
23 cessation effects in the smoke, depth of
inhalation, et
24 cetera.
25 Do you see that?

1825
1 A. Yes.
2 Q. And it goes on to say, thus, it appears
that the
3 hazards of cigarettes can be reduced by a
simultaneous
4 reduction of tar and, among other things -- and
then we get
5 down to the last line where it goes -- and by an
adjustment
6 of nicotine levels and protенation conducive to
consumer
7 saying satisfaction.
8 What they are saying, there is an
association
9 between free nicotine and bound nicotine?
10 A. Yes.
11 Q. And same in the Dr. Teague memo and some
of the other
12 company memos you were shown?
13 A. Yes.
14 Q. And this was from the doctor running the
National
15 Cancer Institute Less Hazardous Cigarette
Program, correct?
16 A. At that time, that's correct.
17 Q. And it was reasonable, was it not, even
responsible
18 for the companies to follow up on suggestions
for that kind
19 of research, Dr. Benowitz?
20 A. Yes, that's reasonable.
21 Q. And you don't criticize them for doing
that research?
22 A. No.
23 Q. And when you put some of those documents
in front of
24 the jury today, you didn't mean to criticize
them for

25 engaging in that research?

1826

comments

on

effects.

that was

it then they

Journal of

these

leader in

around the

didn't do that,

been doing.

Dietrich Hoffman

chemistry,

tobacco

years?

- 1 A. No, it's not engaging in the research. My
2 were that the industry was functioning like a
3 pharmaceutical company doing specific research
4 controlling nicotine levels and nicotine
5 Q. And that was precisely the type of thing
6 being recommended, right?
7 A. Yes.
8 Q. As a matter of fact, if they hadn't done
9 ought to be criticized for that, right? The
10 National Cancer Institute says to do it. If
11 officials say to do it, if Dr. Russell, who's a
12 this area, if they are recommending this all
13 world, if this industry, if these companies
14 they ought to be criticized for that?
15 A. I agree it is research they should have
16 Q. Now, let me show you -- you know Dr.
17 as a researcher in this area?
18 A. I do.
19 Q. A leading person in the area of analytical
20 et cetera?
21 A. Yes.
22 Q. Knows probably as much about tobacco and
23 smoke as almost anybody?
24 A. Yes.
25 Q. Been in the areas area for years and

1827

reliable

tobacco

right?

the

hasn't he?

Food and

- 1 A. Yes.
2 Q. You are familiar, and you would find him a
3 source with respect to data regarding the pH of
4 smoke?
5 A. Yes.
6 Q. Indeed that's one of the areas he studies,
7 A. Yes.
8 Q. Dr. Hoffman has written chapters, has been
9 primary author of chapters in Surgeons Reports,
10 A. Yes.
11 Q. Now, this is an article in the Journal of
12 Cosmetic Toxicology from 1974, okay?

13 A. Yes.
 14 Q. It says that way up there, but I'm not
 sure either
 15 one of us could read it, so would you accept
 that?
 16 A. Yes.
 17 Q. And this is Exhibit AS 863.
 18 And what Dr. Hoffman found then, was
 that
 19 cigarettes made from bright tobacco and blended
 tobacco
 20 deliver mainstream smoke at a pH below 6.2,
 correct?
 21 A. Yes.
 22 Q. And consequently, contains only small
 amounts of
 23 unprotenated nicotine, right?
 24 A. Yes.
 25 Q. And unprotenated nicotine is the free
 nicotine?

 1828
 1 A. Right.
 2 Q. And would you tell, getting into this in
 any detail,
 3 the amount of free nicotine versus the amount of
 bound
 4 nicotine, and the effect of pH on that is
 determined
 5 mathematically through a curve, correct?
 6 A. Yes.
 7 Q. That's called the Henderson Hasselback
 equation?
 8 A. Yes.
 9 Q. If you know the pH, you use mathematical
 formula to
 10 tell you how much to use on this side and how
 much on the
 11 other.
 12 A. Yes.
 13 Q. And at 6.5 there is virtually no nicotine,
 correct?
 14 A. Gets a little tricky when you are talking
 about
 15 virtually none, because it depends how much you
 need for an
 16 effect. There may be a relatively small amount,
 but if
 17 it's a very potent effect, there is a ten times
 18 differences, say, from going to 6.1 to 6.2, 3,
 4. A small
 19 difference could make a big difference in the
 nicotine
 20 amount.
 21 Q. You know that the Surgeon General said
 below 6.5
 22 there would be virtually none put aside?
 23 A. Virtually none is a concept you have to
 interpret.
 24 If you are talking about how much is there
 compared to in
 25 particles, the answer is a very small amount.
 If you are

1829

1 saying is there enough to have biological
activity, the
2 answer may be different.
3 Q. That would be the mouth and throat effect
that the
4 free nicotine has, correct?
5 A. Correct. And brain wave effects, that's
something we
6 haven't talked about, but actually there are
studies from
7 Philip Morris showing that changing pH of
cigarettes,
8 higher pH effects, causes greater brain wave
effects on
9 smokers.
10 Q. But in terms of what you have talked
about, what you
11 presented to the jury on direct, the effect of
the
12 receptors, that's not the effect we are talking
about here,
13 correct, what you talked about on direct?
14 A. Well, that's a good question. That's one
of the
15 mechanisms that's not resolved in terms of why
higher pH
16 causes brain wave activation. Could it be
faster
17 absorption or involving sensory nerves? That
was one of
18 the questions, actually, that I have observed.
19 Q. That question about whether it gets there
faster, you
20 have said just recently, is a theory. You are
skeptical
21 though, correct?
22 A. Right. But my point here is there is
observation
23 that is made, and the question is what explains
it? I
24 don't have the explanation. There have been two
25 explanations offered.

1830

1 One is faster absorption, and one is
inter
2 stimulation. I don't know what.
3 Q. And there might be others some day?
4 A. Those are the two that makes sense. My
point, is the
5 observation is made that high pH cigarettes do
affect the
6 brain differently than lower pH cigarettes. I'm
not sure
7 how, but they do.
8 Q. But what you do know now is that the free
nicotine
9 affects the mouth and throat and has that
impact, correct?
10 A. Yes, yes.
11 Q. Now, what we talked when we talk here,

when Dr.

12 Hoffman talks here about cigarettes, bright
tobacco and
13 blended tobacco, those are American cigarettes,
correct?

14 A. Yes.

15 Q. Now that was 1974, correct?

16 A. Yes.

17 Q. Dr. Hoffman looked at that issue some
years later,

18 didn't he?

19 A. I'm sure he has.

20 Q. And if I could show you, Dr. Hoffman's
article, The

21 Changing Cigarette, and this was published in
the Journal

22 of Toxicology in 1997?

23 A. Yes.

24 Q. All right. And Dr. Hoffman checks these
pH numbers

25 over the years, correct?

1831

1 A. I'm not sure what he does.

2 Q. Here he is, in 1997, publishing the pH
made with flue
3 cured tobaccos with American blends ranged from
5.7 to 6.2.

4 Do you see that?

5 A. Yes.

6 Q. And 6.2 was the number he found 25 years
ago,

7 correct?

8 A. For those cigarettes he looked at, yes.

9 Q. So with respect to the data from Dr.
Hoffman, we see

10 no substantial material continuing increase or
change in

11 pH, correct, based on this table?

12 A. Well, let me say, these are sort of
summary sentences

13 and I have not seen his data year by year of
pH's of

14 cigarettes. So I'm reluctant to say that he's
making the

15 statement that you imply, that pH levels have
stayed the

16 same over the years. I would need to look at
the data he

17 has for that. This is really a summary for
saying pH is

18 about this.

19 Q. Well, but if we accept, without me
characterizing, I

20 won't characterize it, but if you accept what
Dr. Hoffman

21 said, the language he chose, not the language I
chose, the

22 language he chose and the numbers he chose, and
compare his

23 1974 article to his 1997 article, you see no
change in the

24 upper limit, correct?

25 A. He's not --

1832

1 Q. Is that true?

2 A. He's not talking about specific
cigarettes. And when

3 he's making a generalization of how cigarettes
are made and

4 what the pH usages are, he's not saying these
are the ones

5 that have altered sugar content or altered
ammonia content,

6 or what. I don't interpret this the way you do,
I

7 interpret this as a general statement for
certain kinds of

8 tobacco blends; this is what the pH range
usually is, but

9 not specific data saying it's been this way over
X number

10 of years.

11 Q. Would you at least agree that when Dr.
Hoffman chose

12 to write an article in 1974, and when Dr.
Hoffman chose to

13 write an article in 1997, the language he chose
and the

14 numbers he chose for the upper limit for the pH
of American

15 cigarettes was 6.2?

16 MR. COUGHLIN: I object. He's been
over this

17 and it's been asked and answered.

18 THE COURT: I think we understand
the point.

19 We are going to take a lunch time break. In
any case,

20 we'll stand in recess until five minutes until
1:00.

21 Same rules apply. Don't talk about
the case

22 among yourselves, don't form any opinions,
don't express

23 any. Five minutes until 1:00 be back in the
jury room, or

24 actually at 1:00 o'clock be back in the jury
room.

25 So we'll stand in recess until that
time.

1833

1999

1 MONDAY AFTERNOON SESSION - MARCH 1,

2 THE COURT: If you will take your
seat, I'll

3 ask Mr. Weber to continue. And I'll remind the
witness

4 that you remain under oath from this morning.

5 THE WITNESS: Yes.

6 BY MR. WEBER:

7 Q. Thank you, your Honor, good afternoon,
ladies and

8 gentlemen.

9 One more question on psychoactive.
I can't
10 resist. How about getting real cold? Does
that increase
11 psychoactivity?
12 A. It can certainly make you uncomfortable.
13 Q. Do you remember when we ended I had asked
you some
14 questions about Dr. Hoffman's research and his
publication
15 in, I think, 1974, and then his publications
some 25 years
16 later in 1997, about pH levels?
17 A. Yes.
18 Q. Remember I asked you as part of that
whether the
19 Surgeon General had said at a certain level of
pH there is
20 virtually no nicotine?
21 A. Yes.
22 Q. And at that time it was my fault, I was
unable to
23 pull the paper out of my collection. I just
wanted to show
24 you this, Dr. Benowitz, if I could. This is
from the 1989,
25 '79 report, I'm sorry. Page 14 dash 108 and ask
you if

1834
United
flue cured
resulting
essentially
it says?
6 A. Yes, but to get the full picture, if you
go back to
7 the diagram in Hoffman's book or some other
documents, it
8 shows the only, the percent of protonated and
unprotonated,
9 the point I tried to make before and is still
valid. Say
10 there is only a tenth of a percent that's in the
base form,
11 but that tenth of a percent is a thousand times
more active
12 than what's in the acid form, you could say that
it is in a
13 sort of a total number of milligrams, it's
essentially only
14 protonated but the small amount of unprotonated
can have a
15 significant biological effect.
16 Q. Even a tenth of a percent difference?
17 A. All right. I'm saying if a tenth of a
percent is in
18 the unprotonated form, even though that's a

small amount,
19 and could be interpreted at the time as
essentially only
20 protonated, if you talk about a biological
effect if that
21 tenth of a percent is a thousand times more
powerful than
22 the other stuff, it could be important.
23 And that's the problem with
statements like
24 this. You really need to be precise in terms
of how much
25 it is and what the biological impact is.

1835

1 Q. But at least that was the statement made
by the
2 Surgeon General, correct?
3 A. Right. But this is misleading, if the
conclusion is
4 that there is an insignificant effect. That's
misleading.
5 He does say that it's essentially only
protonated, but my
6 comment is, well, essentially is not a hundred
percent and
7 that point one percent could be important.
8 Q. Now, we talked earlier about effect, do
you remember
9 that about the free nicotine and the mouth and
throat and
10 the impact?
11 A. Yes.
12 Q. Right now I'm asking you, you don't mean
to change
13 any of that testimony, do you?
14 A. No.
15 Q. Right now I'm asking you, that's what the
Surgeon
16 General said in '79, right?
17 A. Right.
18 Q. And again just for clarification sake,
when that says
19 protonated nicotine, the protonated nicotine is
the bound
20 nicotine. It's the nicotine you put in
particles on your
21 drawing?
22 A. And the figure you showed me before, if
you want to
23 see what essentially means, go back to the
figure, and we
24 can read off the graph what essentially means.
And we'll
25 know instead of using vague terms.

1836

1 Q. That's the Henderson Hasselback?
2 A. Yes.
3 Q. There have been further studies of pH by
brand done
4 by independent laboratories?
5 A. Yes.

6 Q. You are familiar with Dr. W. S. Bill
Reichert; are
7 you not?
8 A. Yes.
9 Q. Dr. Reichert indeed was one of the people
who helped
10 organize the Canadian expert committee that you
were on and
11 the Reynolds scientists were on?
12 A. Yes.
13 Q. Have you looked at Dr. Reichert's report
from the
14 Massachusetts Department of Health that deals
with American
15 brand cigarettes?
16 A. I have seen it.
17 Q. Let me put this up here then. This is for
the record
18 Exhibit AS 206. And I'm going to show you table
2 from,
19 that's page 12 of Dr. Reichert's chart, okay?
Let me get.
20 Now, I would like, I would like,
doctor, if I
21 could, to blow that up a little more and take
that last
22 column on the right off. But if you would
rather that I
23 have that on, I'll leave it there?
24 A. No; you can take that off.
25 Q. For pH we don't need that, do we?

1837

1 A. No.
2 Q. Now, these, this is Dr. Reichert's
independent lab
3 report on a variety of pH measurements on a
variety of
4 brands of cigarettes?
5 A. Yes.
6 Q. Now, with respect to Marlboro, pH of
Marlboro is
7 pretty much right there in the pack with
everything else,
8 isn't it?
9 A. Yes.
10 Q. PH of Marlboro Light is pretty much in the
pack with
11 everything else?
12 A. Yes.
13 Q. As a matter of fact, would it be fair to
say, Dr.
14 Benowitz, the pH of every single thing he
measured is
15 pretty much in the pack with everything else?
16 A. They are reasonably close, yes.
17 Q. And you have done no studies yourself,
have you, that
18 would enable you to say that any of these
differences in pH
19 would be perceived as different by a smoker,
would you?
20 A. No. One could calculate the free

nicotine, but I've

21 not done any experimental studies.

22 Q. Now, and again these, this is by an
independent lab,

23 correct?

24 A. Yes.

25 Q. Using a consistent pH method?

1838

1 A. Yes. I mean, he works hard at trying to
be as
2 consistent as possible.

3 Q. Now, you mentioned Dr. Russell, we talked
about him
4 several times during the exam?

5 A. Yes.

6 Q. Let me show you what has been marked as

Exhibit AS

7 196 and ask, this is a letter from the Institute
of

8 Psychiatry at the National Addiction Center in
London from

9 Dr. Russell, correct?

10 A. Yes.

11 Q. And it's to the Director of Research at R.
J.

12 Reynolds, correct?

13 A. Yes.

14 Q. And Dr. Russell notes at the beginning
that basically

15 saying I don't know you, but I've been
interested in the

16 Premier cigarette, correct?

17 A. Yes.

18 Q. And he says, and I quote, I think the
Premier has

19 tremendous potential for low risk, long term
nicotine use,

20 and the response to it in your country was
political and

21 irrational?

22 A. Yes, that's what he says.

23 Q. You know Dr. Russell, and that's the type
of

24 viewpoint he's expressed in his writing,
correct?

25 A. The first part is in terms of whether it's

1839

1 irrational. I'm not sure he understands what
the issues
2 are in the U.S., but the rest of it is.

3 Q. Sometimes reactions are different in the
UK than in
4 the U.S., right?

5 A. Yes.

6 Q. That's why they call us two people
separated by a

7 common language. You have heard that one?

8 A. Yes.

9 Q. And then at the end of this --

10 MR. COUGHLIN: I object to all this;
it is all

11 hearsay.
12 THE COURT: Well, it's -- there is
not a
13 question right now.
14 BY MR. WEBER:
15 Q. And Dr. Russell says that he would be
disappointed if
16 a product with this potential were abandoned; do
you see
17 that?
18 A. Yes.
19 Q. Now, Reynolds didn't abandon that product,
did they,
20 and project?
21 A. Premier.
22 Q. And they took that technology and moved it
to
23 Eclipse, didn't they?
24 A. Yes.
25 Q. And they are continuing to work on that,
correct?

1840

1 A. Yes.
2 Q. And that's just what Dr. Russell is
recommending
3 here, correct?
4 A. Yes.
5 MR. WEBER: That's all I have, your
Honor.
6 Thank you very much, Dr. Benowitz.
7 THE COURT: Anyone else wishes to
conduct an
8 examination.

9 CROSS EXAMINATION

10 BY MR. BERNICK:
11 Q. Yes, I have a few documents, your Honor.
Good
12 afternoon, Dr. Benowitz. My name is David
Bernick. I
13 represent Brown and Williamson and British
American Tobacco
14 Company. I don't believe we have had the
pleasure of
15 meeting before.
16 A. Good afternoon.
17 Q. Good afternoon, ladies and gentlemen of
the jury. I
18 want to go back, Dr. Benowitz, to a period of
time before
19 1964 when the Surgeon General's report came out.
You have
20 shown some documents from BATCo's files that
were written
21 before the Surgeon General's report came out,
right?
22 A. Yes.
23 Q. And this one in particular, I think you
showed this,
24 was a memorandum that related to a meeting
between Sir
25 Charles Ellis, who was a consultant for BATCo,
is that

1841

1 right?
2 A. Yes.
3 Q. And he was meeting with people from Batel
which was a
4 research institute in Europe, correct?
5 A. Yes.
6 Q. And what's pointed out here I think this
is one of
7 the documents that you pointed on out on direct
8 examination, there is some reference to smoking
being a
9 habit and also has a strong indication of being
an
10 addiction; do you recall talking about that?
11 A. Yes.
12 Q. In point of fact, this memo actually
relates to is
13 research that was being done at Batel for BATCo,
associated
14 with a project called Ariel, correct?
15 A. Yes.
16 Q. And Ariel was a new kind of novel design
cigarette,
17 correct?
18 A. Yes, it is my understanding that it was
something
19 similar to what we have talked about recently, a
cigarette
20 that delivered nicotine without other toxins or
with fewer
21 other toxins.
22 Q. It heated rather than burning tobacco,
correct?
23 A. Yes.
24 Q. And basically, BATCo was trying to develop
this back
25 in the early 1960's. And the purpose of the
research that

1842

1 was being done by Batel, which was called Hippo
One and
2 Hippo Two, the purpose of that was to be able to
develop
3 research which showed the benefits of nicotine
in order to
4 get people to be interested in this new type of
cigarette,
5 correct?
6 A. Yes.
7 Q. Okay. So, this is basically research
focused on the
8 benefits of nicotine, true?
9 A. Yes, but I don't think you can separate
the research
10 on the benefits of nicotine from issues of why
people
11 smoke.
12 Q. I understand that, but that was the
commercial
13 purpose for doing the project to begin with,

correct?

14 A. Yes.

Hippo One

15 Q. Now Hippo, there were two Hippo reports,

16 and Hippo Two. Do you recall that Hippo Two

actually was

17 research that tried to compare nicotine to the
effects of a

18 drug called Reserpine?

19 A. Yes.

20 Q. And Hippo One, which is the first one
that's referred

21 to, was research into some of the effects of
nicotine that

22 people are familiar with, reduction of stress,
controlling

23 weight gain, correct?

24 A. Yes.

25 Q. And isn't it true that with respect to
Hippo Two,

1843

1 that research resulted in what's called a null
result.

2 That is, it failed to establish the hypothesis
that was

3 being advanced, correct?

4 A. Well, in terms of similarities with
usurpine, it did

5 show some significant results, but some of these
hypotheses

6 about comparability with usurpine were certainly
not shown.

7 Q. The hypothesis of the study would be that
nicotine be

8 comparable with usurpine, but that proved not to
be borne

9 out by the research?

10 A. But there were other findings that were of
interest.

11 Q. Isn't it true with Hippo One, what Hippo
One showed,

12 it didn't reveal any new data or new ideas that
were not

13 already then reflected in the then exiting
published

14 research?

15 A. It was trying to define the actions on
stress

16 systems, so I don't know if there was anything
that was

17 novel. But it sort of took the next step to go
from what

18 was non to see if they could reproduce it in
this other

19 system.

20 And they did develop a very
elaborate sort of

21 model of brain hormone effects of nicotine and
how it

22 reacts with stress and problems.

23 Q. The Hippo One showed something of a
scientific

24 conclusion that was not known to the scientific
community.

25 It never did that, correct?

1844

1 A. I don't think it did, but it certainly
made it clear
2 that BATCo was very aware of this issue and was
thinking
3 about nicotine as an important factor in
smoking.
4 Q. Absolutely, they wanted to do that for
purposes of
5 being able to highlight the benefits of Ariel,
correct?

6 A. Yes.

7 Q. After all the research was done, isn't it
true that
8 this research that was the subject of the
document that you
9 showed the jury, this research went out to a
pharmacologist
10 by the name of Armitage so that he could do an
evaluation
11 to see whether the research was any good or not,
correct?

12 A. Actually, I don't recall. It's possible.

I don't
13 recall his evaluation of it.
14 Q. Let's see if I can refresh your
recollection. Do you
15 recall that there was an appraisal that was done
of the
16 results of project Hippo by Dr. Armitage who was
a very --
17 he was a very well known pharmacologist at that
time,
18 right?

19 A. Yes.

20 Q. You recall that he did an appraisal of
these research
21 reports, Hippo One and Hippo Two, and found them
to be

22 unworthy of publication?

23 A. It's vaguely familiar. I haven't read
that for

24 a long time, but it's vaguely familiar.

25 Q. Let's just bounce to the bottom page here.

You

1845

1 recall the conclusion of his assessment at that
time was
2 that the information of these reports is not
sufficiently
3 complete to justify a new form of publication;
do you

4 recall that?

5 A. Yes; I certainly see it now.

6 Q. Isn't it true that you don't have a basis,
at this
7 point in time, for disagreeing with the
assessment that was

8 reached by Dr. Armitage at that time, do you?
9 A. No.
10 Q. I now want to go, these are all, let's go
back to
11 116.2, if we could for a second. This document
also then,
12 I think as we indicated, makes some statements
about a
13 habit, makes some statements about addiction.
14 If we focus on this period of time
before the
15 1964 report, the '64 report concluded that
smoking was a
16 habit, correct?
17 A. Yes.
18 Q. Prior to the time that that conclusion was
reached in
19 the '64 report, isn't it true that there were
people in the
20 scientific community who had expressed the view
that
21 nicotine was addictive in published literature?
22 A. Yes.
23 Q. In fact, there is a very famous or often
quoted
24 article that appeared in 1942 in a very
prestigious journal
25 called Lancet by Dr. John Stoneby said that
cigarette

1846
1 smokers are like nicotine addicts; they are
smoking for the
2 nicotine?
3 A. Yes.
4 Q. And there are other publications that took
place long
5 before this memo was written in 1961, that used
the term
6 addiction in talking about nicotine said
basically people
7 smoke for nicotine, correct?
8 A. Yes.
9 Q. In fact, isn't it true there were articles
that were
10 published with industry funding, here is one
that talked
11 about, this is Dr. Knapp's article in 1962, do
you recall
12 that Dr. Knapp published a paper on the
addictive aspects
13 of heavy cigarette smoking in 1962?
14 A. Yes.
15 Q. And isn't it true that this research, and
this
16 publication was actually sponsored by the
tobacco industry?
17 A. I don't recall; it could have been.
18 Q. Well, let me see if I can flash that up.
Right here
19 do you see where it says this work was supported
in part by
20 grants from the American Cancer Society and the

Tobacco

21 Industry Research Committee?

22 A. Yes.

23 Q. And the Tobacco Industry Research
Committee that was

24 the TIRC which received from all this research
funds from

25 the tobacco industry, correct?

1847

1 A. Yes.

I think

2 Q. And the Larson Hague and Savette textbook,

Mr. Weber,

3 you mentioned when you were being questioned by

4 that came out in 1961; did it not?

5 A. There were three volumes. I think the
first was '61.

6 Q. And among the research that was summarized
from this

7 textbook that was sponsored by the tobacco
industry, among

8 the research it summarized was research about
people

9 smoking for nicotine, and nicotine being
addictive, right?

10 A. Yes.

11 Q. Now, at the time that these documents were
written,

12 that's in the early 1960's, isn't it true that
there were

13 actually documents that were written internally
by BATCo

14 that specifically picked up on the language that
was being

15 used in the published literature, like habits
and

16 addiction?

17 A. I'm not sure what your question is.

18 Q. All I'm saying is, BATCo is a tobacco
company, is

19 looking at the research that's being published
on is it

20 habit or is it addiction, little unsurprising
that they

21 write that down, they use those terms in their
documents,

22 correct?

23 A. I can't say why they chose the terms. It
could be

24 your explanation. It could be their own
opinion.

25 Q. Do you recall that there was a research
conference

1848

1 that took place in 1962 at BATCo where they
specifically

2 took up the issue of the Royal College of
Physicians

3 report; do you remember that?

4 A. I've not reviewed that document in some
time, but I

5 do recall.
6 Q. And the Royal College of Physicians issued
a report
7 in 1962 that said smoking is both a habit and
it's an
8 addiction. It's an addictive habit, right?
9 A. I believe so.
10 Q. And then we get BATCo documents that say,
nicotine or
11 smoking is a habit of addiction. Not
surprising, is it?
12 A. I suppose. I mean, I can't say what made
the people
13 who wrote this document choose their words.
That's a
14 possibility.
15 Q. Now, you have also pointed out a couple
other
16 documents that by, and I want to touch on very
briefly
17 after the 1964 report. Let me see if I can get
one of them
18 up.
19 You have mentioned, you have talked
about a
20 document in 1979 a BATCo document that's kind
of a, here
21 is what might happen in the future of tobacco
and
22 cigarettes, a tenure product innovation type of
plan. You
23 remember talking about that?
24 A. Yes.
25 Q. And there was another document, I think,
that was

1849
1 part of what was called a structured creativity
conference.
2 Do you remember showing the jury this language
here from a
3 cigarette as a drug administration system for
public use
4 has very, very significant advantages this is
part of a
5 structured creativity. Do you recall that
document?
6 A. Yes.
7 Q. Isn't it true there were other internal
documents
8 written by BATCo's scientists that reviewed the
literature
9 to determine whether in fact smoking was
addictive,
10 correct?
11 A. Well, if you have some of those documents,
I would
12 like to look at them, there are documents that I
have seen
13 that say there are both psychological and
pharmacological
14 factors. But I've, I don't recall documents
that say that

15 nicotine was not a major factor.
16 Q. A I say, there was a report. There is a
BATCo report
17 on dependence on cigarette smoking and review,
and this is
18 a document that says by Dr. Comer. Dr. Comer
was a
19 scientist at BATCo; was he not?
20 A. I don't recall who he is.
21 Q. You recall reading the conclusion, it can
be said at
22 this point, this is an internal document they
reviewed the
23 literature, it can be said at this point the
available
24 evidence does not support the conclusion that
smoking is
25 specifically an addiction to nicotine and that
all or even

1850
1 most smokers will regulate their intake of the
drug to
2 provide constant amounts.
3 You recall there were scientific
reviews done
4 by BATCo over the years that reviewed the
literature and
5 came to these conclusions?
6 A. That's what this paragraph says. I would
actually
7 like to see the, who the document, to what the
-- who the
8 document says. But this paragraph is as you
read it.
9 Q. Have you ever asked plaintiff's counsel to
provide
10 you with other documents in addition to that
BATCo had
11 written in addition to the ones he showed you?
12 A. Well, I've been deposed 6 or 8 times. And
I've
13 testified in trial, 3 or 4 times. And I would
have
14 expected that other documents would have been
provided to
15 me that would convince me that there was good
evidence that
16 the companies did not believe nicotine was why
people
17 smoked cigarettes.
18 And I have not seen those documents.
19 Q. Apart from waiting for the lawyer from the
defense to
20 show you the document at deposition, did you
ever take the
21 step of asking the folks that you are associated
with, gee,
22 why don't you give me what BATCo or other
companies have
23 actually written internally that might express a
different
24 view? Did you ever make that request?

25 A. I'll tell you what I've received are boxes
of

1851

1 documents. And I have no idea how they are

selected. But

2 I must have 6 or 8 boxes of documents I have

reviewed over

3 the past three or four years.

4 I've looked at a number of

documents. I don't

5 recall. I don't know the selection criteria.

I can't.

6 Q. I guess you didn't ask about the selection

criteria

7 then?

8 A. No, I didn't.

9 Q. Over this 1964 period of time, isn't it

true that the

10 tobacco industry continued to fund published

research into

11 the role of nicotine?

12 A. Yes; there was research that was funded on

nicotine.

13 Q. Well, if you would focus for a moment on

this one,

14 are you familiar that Dr. Armitage in particular

continued

15 to do pharmacological work on the basis for the

smoking

16 habit?

17 A. Yes.

18 Q. And that he in fact was funded through the

tobacco

19 research counsel, which was funded by the

tobacco industry

20 in Britain?

21 A. Yes.

22 Q. And Dr. Armitage actually talked

specifically about

23 in this article, about the theory that, I guess

it's right

24 down here, it is worth noting that someone

smoking a

25 cigarette has literally finger tip control of

how much

1852

1 nicotine he takes into his mouth by reducing the

puff

2 volume or inhaling less frequently he absorbs

less

3 nicotine.

4 Isn't it true the tobacco industry

continued to

5 fund research, specifically investigating the

theory of

6 whether and to what extent people smoke for

nicotine?

7 A. That was true as of 1968. I'm not sure

what happened

8 after that, but this, with respect to this study

the answer

9 is yes.
10 Q. Well, isn't it true that the TRC, the
Tobacco
11 Research Council effort in Britain in
pharmacology spanned
12 a period of years and resulted in literally
scores of
13 publications of articles and studies relating to
the role
14 of nicotine in smoking behavior?
15 A. Well, I think, what I don't know is the
years and I
16 know that there was a policy developed by the
Tobacco
17 Research Council, in the U.S. to try to avoid
research that
18 was addiction related.
19 Now, I'm not sure about the British
research
20 counterpart of that. And it would depend on
the years
21 also in terms of if such a policy were put into
place when
22 their policy would have started. And I don't
have that
23 information.
24 Q. Let's take a look at in one you mentioned
role of
25 compensation. Isn't it true the first published

1853
1 observation of compensation and compensatory
behavior was
2 the Luchassi article in 1967 which was funded
through the
3 tobacco industry?
4 A. Yes; this was one, it is one of the
earlier ones.
5 But again, 1967, I don't know the year when
there was a
6 decision that addiction related research was not
a thing to
7 fund, so.
8 Q. The CTR continued to do work on nicotine
all the way
9 through the early 1980s?
10 THE COURT: Let me ask did he bring
up anything
11 on the tobacco companies funding research.
12 THE WITNESS: Well, I'm trying to
establish --
13 THE COURT: What in response to the
plaintiff's
14 case are all these questions about the funding.
15 MR. WEBER: It's offered for the
purpose of
16 demonstrating, your Honor, that the tobacco
industry was
17 saying things internally in its documents which
he focused
18 on in direct examination. And we are
attempting to
19 establish that the tobacco industry made no

bones about
role of
a
to whether
controlled,
right to seek

20 it, published research, made no bones about the
21 nicotine.
22 THE COURT: You'll have to then lay
23 foundation that they controlled the research as
24 someone they had given a grant to, that they
25 whether someone they gave a grant to had the

1854
they were the
Thornton's book,
scientist at
personally.
as an
role of
conference on
nicotine
were published
BATCo?
the Surgeon
true?
issue of
and
This was a

1 to publish an article.
2 MR. BERNICK: Okay.
3 THE COURT: In other words, that
4 controlling force that puts these articles out.
5 BY MR. BERNICK:
6 Q. Let's do that. In the case of Dr.
7 are you familiar with Dr. Thornton who's a
8 British American Tobacco?
9 A. I know his name. I don't know him
10 Q. Do you recall in connection with his work
11 employee sponsored a whole conference on the
12 nicotine in 1978?
13 A. Yes.
14 Q. And do you recall the results of that
15 nicotine including compensation and smoking for
16 that the results of that research conference
17 by Dr. Thornton while he was an employee of
18 A. Yes.
19 Q. And in fact that book has been cited by
20 General reports in 1981 and 1988; isn't that
21 A. Yes.
22 Q. Let's go to one final matter which is the
23 ammonia.
24 You were shown a particular Brown
25 Williamson document. You recall this one?

1855
correct?
itself,
Williamson

1 research conference on ammonia technology,
2 A. Yes.
3 Q. And isn't it true that this conference
4 indicates that one of the reasons that Brown &

5 is actually looking at ammonia is because
ammonia has
6 important taste properties, or leads to
important taste
7 properties?
8 A. Yes.
9 Q. In point of fact, there has been published
research
10 over the years going all the way back into the
early part
11 of the century that basically says that ammonia
and pH can
12 also affect the taste experience of smoking,
correct?
13 A. Yes.
14 Q. Now, I just want to pursue one other
aspect of that,
15 and I'll be done, Dr. Benowitz.
16 Isn't it true when ammonia is added
to
17 cigarettes, it's often added with sugars?
18 A. Yes.
19 Q. And ammonia, if enough ammonia is added,
that can
20 increase pH, but isn't it true if you add it
together with
21 sugars, when the two react, the sugar he tend to
reduce the
22 pH?
23 A. That's right. So, they are sort of
opposing effects.
24 Q. So, if you are adding both ammonia and
sugars,
25 whether there is an effect on pH depends upon
your recipe,

1856

1 right?
2 A. Yes.
3 Q. And that's very similar if we go back to
the way that
4 tobaccos are blended, tobaccos in the United
States that
5 are used for cigarettes are a blended of burly
and flue
6 cured?
7 A. Yes.
8 Q. Those are two different kinds of tobacco;
isn't that
9 true?
10 A. Yes.
11 Q. And isn't it true that the burly tobacco
is higher in
12 ammonia and the flue cured tobacco is higher in
sugar
13 content?
14 A. Yes.
15 Q. So, even when it comes to blending plain
tobacco,
16 burly and flue cured, you are combining ammonias
and sugars
17 in the blending process; isn't that true?
18 A. Yes.

19 Q. And in fact what imparts the distinctive
taste that
20 characterizes American cigarettes, is that
balance between
21 burly and flue cured ammonia and sugar contents,
correct?
22 A. Probably. I don't know that much about
that subtlety
23 in terms of the American flavor characteristic.
24 Q. Let me ask you this. When it comes to the
recon many
25 companies used ammonia as part of reconstituted
tobacco,

1857

1 correct?
2 A. Yes.
3 Q. And isn't it true when it comes to recon
again when
4 the ammonia was added, it was added to the sugar
that we
5 talked about?
6 A. Yes.
7 Q. Isn't it true in the case of Brown &
Williamson
8 recon, the more ammoniated recon you add, the
effect
9 actually is to lower rather than raise pH; isn't
that the
10 fact?
11 A. It could be; I don't know.
12 Q. It's not an area that you have
investigated?
13 A. I've not specifically looked at that
question; that's
14 correct.

15 MR. BERNICK: I have nothing
further, your

16 Honor.

17 CROSS EXAMINATION

18 BY MR. LERMAN:

19 Q. Good afternoon, Dr. Benowitz. My name is
Brad Lerman
20 I represent Philip Morris.
21 A. Good afternoon.
22 Q. And I'm going to try and be brief?
23 A. Okay.
24 Q. I've said that before. I'm going to try
to live up
25 to it.

1858

1 You testified about researcher at
Philip Morris
2 named William Dunn; is that correct?
3 A. Yes.
4 Q. And you showed the jury some documents
that Dunn you
5 know was either the author of or recipient of;
is that
6 right?
7 A. Yes.
8 Q. Doctor Dunn during his career at Philip

Morris spent

9 most of his time studying smoking behavior; is
that
10 correct?
11 A. Yes.
12 Q. He was a psychologist by training; is that
right?
13 A. Yes.
14 Q. One of the documents that you showed the
jury was a
15 Plaintiff's Exhibit 1054. This is a document
called
16 motives and incentives in cigarette smoking. Do
you recall
17 talking about this with the jury?
18 A. Yes.
19 Q. Now, when you testified, you testified
that this was
20 a document that Dr. Dunn had used to make a
presentation to
21 a conference in 1972; do you recall that?
22 A. Yes.
23 Q. In fact, isn't it true that this is
actually a
24 document that was written after the conference
reporting on
25 what occurred at the conference; isn't that
right?

1859

1 A. That's correct.
2 Q. Now in this presentation, Dr. Dunn has the
eloquent
3 beginning there is a lovely little island lying
about 150
4 miles east of the Virgin Islands. It is in the
northern
5 end of the Antilles?
6 A. Yes.
7 Q. And he's giving a flowery description of
this
8 conference, right?
9 A. Yes.
10 Q. You pointed the jury to a particular
passage of the
11 document where Dr. Dunn talked about no one has
ever become
12 a cigarette smoker by smoking cigarettes without
nicotine.
13 Do you remember that portion of the document?
14 A. Yes.
15 Q. And despite, none of them has captured a
substantial
16 segment of the market; do you remember that
language?
17 A. I do.
18 Q. Let me show you the language that precedes
that
19 language.
20 You see where he says the majority
of the
21 conferees would go even further and accept the
proposition

cigarette 22 that nicotine is the active constituent of
this 23 smoke, Dr. Dunn is referring to a consensus at
24 meeting, isn't he?
25 A. In that sentence, yes.

1860

nicotine the 1 Q. And as he goes on, he says, without
talking about 2 argument is there would be no smoking. He's
isn't that 3 discussions that are held at the conference;
4 right?
5 A. With respect to that; it is true.
6 Q. And so this portion of the document does
not 7 necessarily reflect Dr. Dunn's own personal
views. It may, 8 but it does not necessarily reflect his views?
9 A. If it's one paragraph, it's hard to say.
Certainly, 10 the other parts of the document do suggest it is
Dr. Dunn's 11 view.
12 Q. Let me show you the last paragraph of this
document, 13 Dr. Dunn, well, actually there is one other
section, Dr. 14 Benowitz.
15 Dr. Dunn goes on to talk about
conceiving of 16 the cigarette as a day's supplier or a package
or day's 17 supply of nicotine; do you recall that?
18 A. Yes.
19 Q. Let me show you another paragraph in the
document. 20 You see where he says, less anyone been made
unduly 21 apprehensive about this drug like
conceptualization of the 22 cigarette, let me hasten to point out, that
there are many 23 other vehicles of sought after agents which
dispense in 24 dose units.
25 Wine, is the vehicle and dispenser
of alcohol,

1861

of 1 tea and coffee are the vehicles and dispensers
and money 2 caffeine. Matches dispose dose units of heat,
dispenser of 3 is the storage container vehicle and dose
4 many things; do you see that?
5 A. Yes, but I'm going to have to add that he
didn't just 6 say it was a vehicle. They also talked about a
lot of

7 characteristics of it that were particularly
useful which
8 are not talked about here.
9 Q. What he's saying is conceptualizing
something is a
10 dispenser of a dose is not something that
necessarily
11 applies to an addictive drug is it; that's what
he's
12 saying?
13 A. That's right.
14 Q. Now, at the end of this document, Dr. Dunn
says the
15 following. This is the end of my presentation,
if you have
16 been intrigued by any of these ideas, I
recommend the
17 recently published volume entitled smoking
behavior,
18 motives and incentives, a compendium of papers
presented at
19 this St. Martin's conference published by
Winston and Sons
20 in Washington D.C.
21 The papers that were presented at
this
22 conference were in fact published in the book,
weren't
23 they?
24 A. Yes.
25 Q. And I know this doesn't surprise you, I
just happen

1862
1 to have the book here, Dr. Benowitz. This is
plaintiff's
2 Exhibits I W P 11525. This book came from the
Columbus
3 State Library of Ohio, in Columbus, Smoking
Behavior and
4 Motives and Incentives by William Dunn. Did you
know, do
5 you know when it was published, doctor?
6 A. 1973 or '4.
7 Q. That's right. It was published in 1973.
And the
8 book contains various presentations made by
people who were
9 at this conference, right?
10 A. Yes.
11 Q. The same conference that Dunn is reporting
on in that
12 document, correct?
13 A. Yes.
14 Q. And the people who were there were varied,
some of
15 them very distinguished scientists; is that
correct?
16 A. Yes.
17 Q. Scientists from Harvard and from Queen's
College of
18 the City of New York and the Institute of
Psychiatry from

19 London and Columbia University; do you see that?
20 A. Yes.
21 Q. All right. And this book has been
available to the
22 public and in fact still is in the Library in
Columbus --
23 but we have got to get it back next week or pay
a fine --
24 for 25 years or so; isn't that right?
25 A. Yes.

1863
at that
1 Q. Nothing is secret about what was discussed
2 conference, was there, doctor?
3 A. No.
4 Q. Now, you also talked about Dr. DeNoble; do
you recall
5 that?
6 A. Yes.
7 Q. And you were talking about some of the
work that he
8 did at Philip Morris with rats?
9 A. Yes.
10 Q. Now, isn't it true by the time Dr. DeNoble
began
11 experimenting and the experiments that you
described, with
12 respect to Dr. DeNoble were what you called
reinforcement
13 experiments; is that right?
14 A. Yes.
15 Q. He was seeing whether or not nicotine was
a
16 reinforcer in rats?
17 A. Yes.
18 Q. In other words, you could train the animal
to
19 administer the drug to itself or do something to
make it
20 get nicotine?
21 A. Yes.
22 Q. Isn't it true by the time Dr. DeNoble
began those
23 experiments at Philip Morris it had already been
24 established in the scientific communities that
animals
25 would treat nicotine as a reinforcer?

1864
studies showing
1 A. There would be, there had been some
difficult. I
2 that, and some people claiming it was very
3 think his finding that part of it was not
necessarily earth
4 shaking, but I think his work with acid aldehyde
was very
5 interesting, and no one else I know was doing
that.
6 Q. Is his work for rat reinforcement for
nicotine, you
7 will agree with me was not necessarily ground

breaking?

8 A. Well, no, it was not ground breaking. But
it
9 clearly, what it was addressing the question
role of
10 nicotine in maintaining smoking.

11 Q. In fact, the 1988 Surgeon General's report
cites the
12 various studies that preceded Dr. DeNoble in
which animals
13 used nicotine in a reinforcing fashion?

14 A. Yes.

15 Q. And the fact a substance is a reinforcer
doesn't mean
16 it's addictive, does it?

17 A. No.

18 Q. Now, in fact, some of Dr. DeNoble's work
was cited to
19 in a chapter that was written by Dr.
Henningfield; is that
20 right?

21 A. Yes.

22 Q. Are you aware of that?

23 A. Yes.

24 Q. And in 1984 Dr. Henningfield published
something
25 called Behavioral Pharmacology of Cigarette
Smoking, and in

1865

1 it he cites to some of Dr. DeNoble's work; is
that right?

2 A. Yes, I believe that Dr. DeNoble had
presented the
3 work at a conference, and actually was submitted
for
4 publication and accepted but withdrawn. But his
work that
5 was presented at the conference was seen by
other

6 scientists including, Dr. Henningfield.

7 Q. Okay. And here right at the bottom
without going
8 through this, you can see right at the bottom of
this

9 document a citation to Dr. DeNoble's work.
Doctor Mele and

10 Dr. Ryan, those were scientists at Philip
Morris, correct?

11 A. Yes, but was that cite to a meeting or to
a
12 publication?

13 Q. And I guess the document doesn't tell us?

14 A. Well, the back of the document with the
reference
15 list would tell you.

16 Q. All right. And I don't, I'm sorry. I
apologize. I

17 don't have that up at the podium with me.

18 Now, Dr. DeNoble in doing his work
did not
19 conclude while he was working at Philip Morris
that

20 nicotine was addictive, did he?
21 A. No, but he --
22 THE COURT: Does he have any
knowledge? I
23 don't know why we are asking these questions.
How would
24 he have personal knowledge as to what somebody
else
25 concluded, what somebody else. He can repeat
what

1866
1 somebody else had written, but how can he state
what
2 somebody else concluded.
3 MR. LERMAN: Only to clarify the
nature of Dr.
4 DeNoble's work do I think this is relevant.
5 THE COURT: Well, I think it's, it's
not
6 admissible, because he doesn't have personal
knowledge.
7 And if you ask him to repeat an out of court
statement
8 made by your client, it would be hearsay. And
I really
9 don't want it as an out of court statement
offered against
10 your client, which would not, if you go to an
out of court
11 statement in support of your client, he can't
offer it
12 because it is hearsay.
13 If you are asking him simply what
somebody
14 else's mind set was, he doesn't have personal
knowledge to
15 testify.
16 MR. LERMAN: And, your Honor, I'll
move out,
17 and the only thing I would point out I would be
offering
18 DeNoble's conclusions, not for the truth, but
merely to
19 show what he concluded, he did work, he reached
20 conclusions. To me the conclusion is what's
relevant, not
21 the truth behind it at this point. But I'm
going to move
22 on, your Honor.
23 Q. You talked about Kathy Ellis in your
direct
24 testimony; do you recall that?
25 A. Yes.

1867
by training;
1 Q. Now, Dr. Kathy Ellis is a pharmacologist
2 is that correct?
3 A. I believe so.
4 Q. And she works at Philip Morris?
5 A. Yes.
6 Q. And now she's one of the senior scientists

at Philip

7 Morris; is that right?

8 THE COURT: If you know.

9 THE WITNESS: I thought she was a

director of

10 world wide scientific affairs or something.

I'm not sure.

11 She is a scientist in terms of doing the

sciences. She's

12 a scientific administrator.

13 Q. And she contacted you after you were

deposed in a

14 case that was being litigated in the State of

Washington,

15 right?

16 A. Yes.

17 Q. And she called you to tell you that Philip

Morris

18 would be willing to make cigarettes available to

you with

19 different amounts of ammonia; do you recall

that?

20 A. Yes.

21 Q. And she said that if you wanted to do

research on

22 them, she would prepare those; do you recall

that?

23 A. Yes.

24 Q. You said you would be interested in that;

is that

25 right?

1868

1 A. Yes, but we also talked about what the

issue was,

2 meaning the question of pH. And so I think it

was quite

3 clear to her that, that the scientific question

was really

4 whether pH influences the rate of absorption of

nicotine in

5 the body.

6 Q. Wasn't one of the questions that you

wanted to study

7 whether or not ammonia affected pH?

8 A. No, the study, that was not my interest at

all. My

9 interest, and I think it's quite clear, is

whether pH means

10 or results in faster absorption of nicotine in

the blood

11 stream.

12 Q. Doctor, do you recall you were deposed in

a case in

13 May of 1998 called the Angle case?

14 A. Yes.

15 Q. All right. Do you recall this question

and answer.

16 Question: Can you describe them and what are

these

17 cigarettes again? Answer: These are cigarettes

that

18 supposedly would be like a full flavor

cigarette, but
19 varying in ammonia content. So, they would look
at the.
20 Question: Does ammonia impact on the amount of
free
21 nicotine in smoke or unprotonated nicotine in
the smoke?
22 Does it impact on the rate of absorption into
the blood
23 stream; do you see that?
24 A. Yeah, well, I haven't seen what preceded
this, but
25 the whole issue behind all of this is really the
pH

1869

1 question. It's really what I drew in that
diagram with the
2 different amounts of free nicotine. That's the
key
3 question.
4 I've assumed that ammonia is what
causes the
5 change, because that's what all the documents
I've read
6 said. But I'm not a cigarette manufacturer.
And if
7 that's not the case, still the crux of the
matter for me
8 is the pH.
9 Q. Well, let me point you to some additional
testimony,
10 and what the objective of the research was that
you wanted
11 to find. Answer: Well, there are two
questions. One is
12 having different levels of ammonia in the
cigarettes, what
13 impact does that have on the amount of
unprotonated
14 nicotine in the smoke.
15 That's something Dr. Pankow looked
at it and
16 Dr. Pankow is somebody that you do work with;
is that
17 right Dr. Benowitz?
18 A. I have, we had, we have talked about it.
He's a
19 colleague from Oregon.
20 Q. And you go on and then assuming that he
finds that it
21 is different, then what I would do is look at
the rate of
22 absorption into the blood stream; is that right?
23 A. Right. But all this is focused on the pH
question
24 which is how ammonia is supposed to act.
25 Q. All right. So, then it's true that you
asked Philip

1870

1 Morris to prepare cigarettes with different
amounts of

2 ammonia; is that correct?
3 A. Yes, but with the scientific question
being, and I'm
4 sure Dr. Ellis understood this, we talked about
this, the
5 real question is does pH differences affect rate
absorption
6 of nicotine.
7 Q. Doctor, under oath you testified there
were two
8 questions to be answered?
9 MR. COUGHLIN: I would object to the
argument.
10 Q. Did Dr. Kathy Ellis have cigarettes six
prepared with
11 differing amounts of ammonia?
12 A. Yes.
13 Q. And did she do tests on those cigarettes
to see if
14 ammonia varied pH?
15 A. Yes.
16 Q. And did she also have Mr. Reichert who we
have
17 already testified about at Labstat and Mr. Weber
showed you
18 some results, did she have Dr. Reichert perform
tests on
19 those cigarettes?
20 A. Yes.
21 Q. And were the results of those tests that
she had
22 performed that ammonia did not affect to any
wide degree pH
23 levels?
24 A. Yes.
25 Q. -- in those cigarettes?

1871
1 A. Yes.
2 Q. And were you apprised of those tests? In
other
3 words, were you copied on the results of those
tests from
4 Dr. Reichert?
5 A. Yes.
6 MR. LERMAN: I have nothing further,
judge.
7 THE COURT: Do you have any
redirect?
8 MR. COUGHLIN: Yes, your Honor.
9 THE COURT: Do you have any for
Lorillard.
10 MR. FOWLER: No questions, your
Honor.
11 MR. COUGHLIN: Doctor, you remember
being asked
12 some questions, testimony in '89 in the, I
think it's the
13 Grenell case?
14 A. Yes.
15 Q. And you were being asked questions about
whether you
16 would change your mind about the use of the word

addiction;

17 do you remember that?

18 A. Yes.

word

19 Q. And at the time what were you equating the

20 addiction to?

dependence

21 A. Well, we were talking about the fact that

Surgeon

22 and addiction were used interchangeably in the

23 General's report and if my own writing.

word?

24 Q. And at the time you preferred to use the

would be

25 A. Well, at this time, I thought dependence

1872

because of

1 more precise from a scientific point of view

things like

2 some concern of some of the connotations of

thought at that

3 anti-social behavior, et cetera. And so I

an issue

4 time, and as I said before, I don't think that's

changed by

5 because people's understanding in general has

clearly

6 that time. I thought dependence would be more

7 understood.

you?

8 Q. You weren't equating it to a habit, were

9 A. No; I never said it was a habit.

of addiction

10 Q. And you are not alone in this definition

11 and dependence being equal; is that right?

12 MR. WEBER: Your Honor.

13 THE COURT: Sustained as to form.

14 BY MR. COUGHLIN:

addiction to

15 Q. Are you alone in this equation of

16 dependence?

public health

17 A. No, I think many scientists who, many

tobacco use is

18 organizations have endorsed the concept that

I think

19 an addiction. And nicotine is an addiction, and

addiction are

20 that, and in that context dependence and

21 embraced as equivalent.

be one, is

22 Q. And the American Medical Association would

23 that correct; is that right?

24 A. Yes.

25 Q. American Heart Association?

1873

1 A. Lung association, yes.

2 Q. The British American Association?

3 A. Not British.

4 Q. I mean, British Medical Association?

5 A. Medical Association, yes.

6 Q. Mr. Weber had asked you some questions
about some
7 research with pH and trying to what he -- he
said break the
8 tar nicotine ratio?
9 A. Yes.
10 Q. Okay. And is there a common tar and
nicotine ratio?
11 A. Well, in general, the ratio of tar to
nicotine is
12 between say 10 to 15. So, it means the tar
level is 10 to
13 15 times the level, tar level of nicotine.
14 Q. And had he showed you some articles where
people were
15 trying to up the nicotine level and lower the
tar level; is
16 that right?
17 A. Right.
18 Q. And that was to reduce the carcinogens; is
that
19 right?
20 A. Yes; that's correct.
21 Q. Now, when we looked at those internal
documents, when
22 they were trying to up the free nicotine, or up
the kick,
23 were they doing that to reduce the carcinogens?
Was that
24 the primary purpose?
25 MR. WEBER: Let me object, unless he
knows the

1874
1 purpose, your Honor, foundation.
2 THE COURT: Sustained.
3 BY MR. COUGHLIN:
4 Q. What did it appear to you from the
documents that you
5 had reviewed that they were doing that for?
6 MR. WEBER: Same objection.
7 THE COURT: Sustained.
8 BY MR. COUGHLIN:
9 Q. At the time that you had taken a look at
those
10 internal documents, what brands were they
comparing?
11 A. Well, some of the comparison documents
looked at
12 Marlboro versus Winston and Kool versus Salem.
13 Q. And what was RJR trying to do?
14 MR. WEBER: Objection, your Honor.
15 THE COURT: He can't testify as to
what
16 somebody else's purpose was.
17 BY MR. COUGHLIN:
18 Q. What did the documents indicate RJR was
trying to do?
19 A. Those were marketing research, they stated
that they
20 wanted to try to figure out why Marlboro was
doing so much
21 better than Winston and why Kool was doing so

much better

22 than Salem.

1223? And 23 Q. And would you also take a look at Exhibit
24 this was a December 4, 1973 document from Frank
Colly; do 25 you recall, do you remember looking at that?

1875

1 A. Yes.

appeal 2 Q. It is suggested to develop a new RJR youth
3 brand based on the concept of going back at
least halfway 4 to the technological design of the Winston and
other filter 5 cigarettes of the 1950's; do you see that?

6 A. Yes.

7 Q. And at --

8 MR. WEBER: Objection, your Honor.

I asked no

9 questions about this document at all.

question is. 10 THE COURT: I'm not sure what the

11 BY MR. COUGHLIN:

12 Q. The question is that there was an
inference they were 13 doing it to reduce the carcinogens and here at
the bottom? 14

it has some 15

relevance.

16 BY MR. COUGHLIN:

17 Q. It says still with an old style filter,
any desired 18 additional nicotine could be released on pH
regulation? 19

20 A. Yes.

the other 21 documents?

22 A. Yes.

23 Q. They talk to you about comparing the
magnitude of, I 24 guess, nicotine with caffeine, the magnitude,
the impact on 25 people?

1876

1 A. Yes.

little more 2 Q. Can you tell us what, can you tell us a
3 about that?

comparing 4 A. Well, there has been quite a lot done on
5 caffeine and nicotine in terms of strength of
compulsive 6 use and about consequences of use. Caffeine is
absorbed 7 slowly. It's got some mild stimulative effects.

If you
you get a

8 are a regular coffee drinker, when you stop it,

9 headache. So, it does have some of the
characteristics
10 that we talked about.
11 There is very little evidence though
that
12 people, when they have medical reasons not to
use
13 caffeine, cannot switch away from caffeine.
That, that
14 people use caffeine when they are, are good
reasons not to
15 do so. And certainly in terms of harm of
caffeine, there
16 is very little medical evidence that caffeine
is harmful,
17 other than causing some symptoms from drinking
too much
18 coffee.
19 In contrast, nicotine has been shown
to affect
20 a number of different types of behaviors.
Besides mild
21 stimulation, we have talked about a variety of
different
22 behaviors, stress reduction, relaxation, anti
depression,
23 effects mood modulation. There is a great deal
of
24 evidence that people are not able easily to
quit smoking
25 when there are compelling medical reasons to do
so.

1877
1 And at the same time nicotine is
associated
2 with tremendous health consequences with
respect to death
3 and chronic disease.
4 The issues for caffeine and nicotine
are just
5 totally different, and I don't think, I don't
think that
6 they can be equated in any way.
7 Q. Mr. Bernick showed you a document 3318,
and he asked
8 you about whether, whether B and W was looking
at nicotine
9 ammonia technology to enhance flavor; you
remember he
10 showed you that document?
11 A. Yes.
12 Q. Were they also looking at it to improve
the nicotine
13 transfer; did that document also indicate that?
14 A. Yes; they -- it did.
15 Q. Finally, Philip Morris, the attorney
talked to you
16 about, about Mr. William Dunn; do you remember
that?
17 A. Yes.
18 Q. And he talked to you about a book, and he
showed you

19 a book. And we were taking a look before that
at Exhibit 20 1054, the Dunn paper?
21 A. Yes.
22 Q. Was this published in that book?
23 A. I don't know if it was published verbatim.
I have to
24 go back and recheck the two. I don't recall
exactly how
25 much it was published and how much it was not.

1878
1 Q. But it's clear, it's clear to you from
reviewing, is
2 it clear to you from reviewing the internal
documents of
3 the industry that the documents reflect that the
industry
4 had knowledge, full knowledge of nicotine and
its impact?

5 MR. WEBER: Objection.

6 THE COURT: Sustained.

7 BY MR. COUGHLIN:

8 Q. What do you conclude are the internal
review of the
9 documents of company and their knowledge about
nicotine and
10 its addictive nature?

11 MR. WEBER: Objection.

12 THE COURT: Sustained.

13 BY MR. COUGHLIN:

14 Q. Was there anything that you saw that
defense
15 attorneys showed you today that is inconsistent
with your
16 conclusion that nicotine is addictive and that
the industry
17 knew this?

18 A. No. In fact, I think the fact that the
industry was
19 supporting and sought research by outside
scientists
20 relating to addiction, the fact they sponsored a
conference
21 and published proceedings on addiction or topics
related to
22 addiction makes it very clear the industry knew
as much as
23 scientists knew that people were smoking
cigarettes for
24 nicotine, that nicotine was addiction producing
or
25 dependence producing, if you don't like the term
addiction.

1879
1 But that's why people were smoking cigarettes,
and they
2 knew it for a very long time.
3 MR. COUGHLIN: No further questions.
4 THE COURT: Thank you. Thank you,
doctor.
5 Would the plaintiff -- well wait just a second.

Would the
6 attorneys approach once.
7 (The following discussion was
conducted at the
8 side bar between court and counsel, out of the
hearing of
9 the jurors, as follows:)
10 THE COURT: Anybody else writing.
One juror
11 had a question which reads: What happens to --
what
12 happens to a smoker who does not inhale, if
anything?
13 MR. WEBER: Does not what?
14 THE COURT: Inhale, if anything.
You can ask
15 follow-ups if you want, just on that limited
issue.
16 (The following proceedings were
conducted in
17 open court.)
18 THE COURT: Doctor, what would
happen with
19 regard to addiction or nicotine with regard to
a smoker
20 who does not inhale?
21 THE WITNESS: Well, a smoker who
does not
22 inhale would not likely to become addicted.
There are a
23 few, not very many, we have actually studied
this. And a
24 relatively small percentage of daily smokers
don't inhale.
25 There are people who don't smoke
every day who

1880
1 smoke occasionally at parties or with friends
who don't
2 inhale very much. But most regular smokers,
and we
3 studied a great many, who smoke every day do
inhale, and
4 they are dependent.
5 THE COURT: Does the plaintiff have
any follow
6 up on that limited area.
7 MR. COUGHLIN: No, your Honor.
8 THE COURT: Does the defendant?
9 BY MR. WEBER:
10 Q. Just one. If it were not inhaled, just
held in the
11 mouth, that would be mouth and throat sensation
that you
12 described earlier, correct?
13 A. Yes.
14 MR. WEBER: That's all.
15 THE COURT: Thank you, doctor.
16 Would the plaintiff call your next
witness?
17 Does the plaintiff wish to make any
interim

18 argument before obtaining the next witness.
19 MR. COUGHLIN: We would just call
our next
20 witness, your Honor.
21 THE COURT: Do you have any requests
for
22 interim argument?
23 MR. WEBER: No, your Honor.
24 THE COURT: Okay.
25 MR. COUGHLIN: Your Honor, we would
play a tape

1881
1 next of Dr. Osdene.
2 MR. LERMAN: Your Honor, can we
approach. We
3 have a motion on this.
4 THE COURT: Is the motion you made
before
5 trial?
6 MR. LERMAN: No, your Honor.
7 THE COURT: Okay, I would afford
counsel an
8 opportunity to approach.
9 (at side bar)
10 MR. LERMAN: Your Honor, we filed a
motion.
11 I'm certain this court hasn't had a chance to
read it. I
12 have it with me.
13 THE COURT: What is it?
14 MR. LERMAN: The thrust of the
motion is, I
15 understand we lost the motion. We would ask
the court to
16 limit the number of repetitions. These are
lengthy
17 depositions in which, very prejudicial
questions are asked
18 over and over again, and which he seeks the
same answer.
19 MR. COUGHLIN: I'll tell you what
I'll do.
20 I'll play it for a while so they can get it. I
think the
21 tape may be 40 or 50 minutes. I'll play 10 or
15 minutes
22 and put a transcript in for the rest of it.
And the jury
23 can look at it.
24 THE COURT: My thoughts would be
more we don't
25 need more than four or five minutes of it, and
if you want

1882
1 to admit a transcript.
2 MR. LERMAN: Your Honor, there are
two other
3 issues. One is we would like certain portions
of this
4 deposition counter designated to show the
absurdity of

5 some of the questions he takes the Fifth
Amendment.
6 The second issue, some of the
questions --
7 THE COURT: Actually, I think you do
criminal
8 work.
9 MR. ADELMAN: Occasionally.
10 THE COURT: You may be in a position
where
11 counsel advises him, you can't pick or choose
as to how
12 much you waive, whether it's a pack of
Marlboros or not.
13 He was likely being advised. You take a risk,
if you
14 answer as to one question, you have waived.
15 So, anyways, in terms of the time, I
don't want
16 to do this more than a couple of minutes.
17 MR. COUGHLIN: Okay.
18 THE COURT: And just pick a couple
questions.
19 MR. LERMAN: Can we at least get
portions of
20 the transcript we would like read.
21 THE COURT: We can do that all at
once.
22 MR. COUGHLIN: The next witness is
Dr. Farone.
23 And he will, a lot of this stuff, I think what
he is going
24 to say --
25 THE COURT: You can -- I'm just not
going to

1883
have him
6
six
pick them.
to hear the
5
6
some portions
7
before they
8
that time.
9
right now,
10
to play
11
12
designate some
13
ask the
14
15

1 spend the time, having a question offered and
2 refuse to answer. If you want to pick five or
3 questions that you think are important, you can
4 But we are not going to spend 45 minutes just
5 questions.
6 And then if you want to designate
7 you wish to offer, I'll hear that subject
8 close their case. And I'll make a decision at
9 MR. COUGHLIN: We'll just play it
10 just a couple minutes, and later if they want
11 more, we'll just ask four or five questions.
12 THE COURT: And if you want to
13 written portions.
14 MR. LERMAN: In the meantime, may I
15 court to consider the written motion and see if

it affects
16 your thinking on going forward.
17 THE COURT: I think you have stated
the
18 grounds, and at this point I'll deny it. It's
basically
19 on the issue I think the underlying authority
that the
20 jury is permitted to draw an inference in a
civil case
21 such as this. And while you -- the fact that
Philip
22 Morris went in and tried to argue soliciting
testimony may
23 go to the witness.
24 But I think it goes to the
admissibility. And
25 I made the finding earlier there is an
allegation the jury

1884
1 can find there was a conspiracy among these
people. And
2 if so, it can be offered against the
co-conspirators as
3 well as Philip Morris.
4 And then just finally, the court has
earlier
5 made a finding that the matter's not more
prejudicial than
6 probative. Because of his position principally
with
7 Philip Morris and his direct contact with so
many
8 important questions concerning this.
9 MR. LERMAN: Your Honor, finally
just for the
10 record, we do in our motion identify certain
questions
11 that are asked that we think are objectionable,
regardless
12 of the answer the witness gives. There is
quoting from
13 the ashes to ashes book, and some others.
14 THE COURT: That's not going to be a
part of
15 this, right.
16 MR. COUGHLIN: No. Do you know
where it is?
17 I'll try not to play it.
18 THE COURT: If you want to raise an
objection
19 as to a particular question, you can do it.
20 MR. LERMAN: Thank you, your Honor.
21 THE COURT: If the jury will be
seated. We see
22 that juror number 2 and number 3 kind of
coordinated their
23 outfits today. We'll try to ask them what they
will be
24 wearing tomorrow.
25 I'll ask the plaintiff at this time
to call his

1885

1 next witness. I don't mean to make light, but
you'll see 2 the attorneys have different uniforms for the
day. The 3 plaintiff's is the blue uniform. Tomorrow
you'll likely 4 see them in the gray uniform.
5 MR. ADELMAN: If I may, your Honor,
I will call 6 Thomas Farone.
7 THE COURT: Thank you.
8 WILLIAM A. FARONE
9 called as a witness by and on behalf of the
Plaintiff, 10 being first duly sworn, was examined and
testified as 11 follows:
12 THE COURT: And if you'll state your
name and 13 spell your last name for the court reporter.
14 A. My name is William Anthony Farone,
F-A-R-O-N-E.
15 THE COURT: Mr. Adelman.
16 - - -
17 DIRECT EXAMINATION
18 BY MR. ADELMAN:
19 Q. Doctor, good afternoon. Doctor, can you
tell us 20 where you are from?
21 A. Irvine, California.
22 Q. And how are you employed now?
23 A. I am a President and Chief Executive
Officer of 24 Applied Power Concepts, Incorporated.
25 Q. And generally and briefly tell us what
Applied Power

1886

1 Concepts does?
2 A. We develop remediation technology and
replacement for 3 things which pollute the environment.
4 Q. Are you the President?
5 A. Yes, I am.
6 Q. How many people do you employ?
7 A. 12.
8 Q. Are any of those people scientists?
9 A. All of them.
10 Q. How long have you been engaged in Applied
Power 11 Concepts?
12 A. 13 years.
13 Q. Prior to that time, which brings us back
to the 14 mid-'80's, where were you employed?
15 A. At a prior company called Advanced
Scientific 16 Applications Incorporated from 1984 through
1987, when 17 Applied Power Concepts bought it out.
18 Q. Now, was there ever a time you worked for

Philip

19 Morris?

20 A. Yes, there was.

21 Q. When was that?

22 A. From the end of March, 1976 to July, 1984.

23 Q. In what capacity did you work at Philip

Morris?

24 A. The first year I worked for Philip Morris

I had

25 position of Associate Principal Scientist,
reporting to Dr.

1887

1 Robert B. Seligman, Vice President of Research
and

2 Development. The mission was to learn about the
business.

3 And then for next seven years, I was Director of
Applied

4 Research, at Philip Morris.

5 Q. And where geographically were you situated
during

6 those 8 years of Philip Morris?

7 A. At the laboratories in Richmond, Virginia.

8 Q. Before we can go on, can you give us a bit
of your

9 educational background, let's say, starting in

college?

10 A. I received my bachelors in science in 1961

from

11 Clarkson University. My major was in chemistry

with minors

12 in electrical and chemical engineering. I

received my

13 masters degree in chemistry completed in 1962,

received a

14 degree in 1963. I received my doctor of

philosophy in

15 chemistry in 1965, also from Clarkson

University.

16 Q. Have you ever taught?

17 A. I taught college for two years, associate
professor

18 of chemistry at Virginia State University.

19 Q. And have you ever been involved in writing
articles

20 in the field of chemistry or related field?

21 A. Yes, I have some more than 50
publications.

22 Q. Now, have you ever done or made any

application for

23 patents?

24 A. Yes, I think I'm inventor on some 13 to 15
different

25 patents.

1888

1 Q. Was there a time you were employed by
Lever Brothers?

2 A. I was employed by Lever Brothers in 1967
through

3 1975.

4 Q. And where in Lever Brothers complex did

you work,
5 sir?
6 A. At the laboratory in Edgewater, New
Jersey.
7 Q. And briefly, what type of work did you do
there?
8 A. I began as a Senior Scientist and advanced
to Manager
9 of New Product Development. And I became their
Director of
10 Scientific Research in 1972, a position that I
held until
11 1975.
12 Q. Now, you joined Philip Morris in 1976,
correct?
13 A. Yes.
14 Q. And what did you do in the interim years
between 1965
15 and 1976?
16 A. I was Vice President of Research
Development of
17 a company called PBVO International.
18 Q. Did you seek out the position at Philip
Morris that
19 you obtained?
20 A. No, I did not.
21 Q. How did it come about that you joined
Philip Morris?
22 A. I was sought by an executive search firm
of Hide,
23 Direct and Struggles.
24 Q. Now, moving ahead, looking to the 8 years
of your
25 employment at Philip Morris, could you tell us
what type of

1889
1 tasks you were assigned to do?
2 A. The first year I was acquainting myself
with all of
3 the work that was going on, the major tasks for
which I was
4 hired, two tasks basically to help the company
diversify
5 into areas other than tobacco and cigarettes,
and the
6 second was to help them produce better products,
that is,
7 both economically and also from the issue of
safety, safer
8 products.
9 Q. To the first point, can you tell us what
you did or
10 what you were asked to do with respect to
diversification?
11 A. The concern when I first was interviewed,
and as I
12 came there, was the industry was under
tremendous pressure
13 on the health issues. And the concern was that
people
14 would reduce smoking and decrease their smoking
in which

15 case they needed to have other businesses that
they could
16 diversify into.
17 And so I helped with what's called
merger and
18 acquisition analysis, suggesting firms that
they might
19 acquire that would compliment their business
and helping
20 them analyze firms which other people suggested
they might
21 acquire to compliment their business.
22 Q. Was there anything in your background that
enabled
23 you to do that?
24 A. I had performed a similar function for
Lever
25 Brothers. Lever Brothers is owned by Uni-Lever.
It
1890
1 acquires companies worldwide.
2 Q. Now, you mentioned the second issue with
your
3 engagement, which is the safer cigarette. Was
that a
4 reason you went to Philip Morris?
5 A. That was one of the challenges was to help
them
6 develop a safer product, yes.
7 Q. Did you discuss that initially before you
took the
8 job?
9 A. I did. That was the, is subject of
discussion with
10 virtually all of the people that I interviewed
with.
11 Q. And who were they?
12 A. In New York City I interviewed with Dr.
Robert B.
13 Seligman, who was going to become the Vice
President of R
14 and D and to whom I would report; Mr. Cliff
Goldsmith, who
15 was I believe at that time the President of
Philip Morris
16 USA.
17 In Richmond I interviewed with Dr.
Helmut
18 Wakeham, who was Vice President of R and D at
that time,
19 Mr. Frank Resnick, who was Director of
Research, Dr.
20 Thomas Osdene, Director of Biochemical
Research, Dr. Walt
21 Gannon, and Mr. William Dunn.
22 Q. Taking all these people collectively that
you have
23 just mentioned, was it represented to you that
Philip
24 Morris was committed to developing a safer
cigarette?
25 A. Yes, it was.

1891

1 Q. Did you accept that?
2 A. Yes, I did.
3 Q. Was that a motivation for you to come
there?
4 A. Yes, it was a challenge to take a product
which is
5 used by a lot of people and to make that product
safer.
6 Q. Now, as Director of Applied Research, how
many people
7 did you supervise?
8 A. It changed over the 7 year period, started
with about
9 40 at one time. It may have been often over
200. I never
10 really counted them. The average was about 150.
11 Q. Were any of these people scientists?
12 A. Approximately a third, I think, held
advanced
13 degrees. Maybe another third had bachelors
degrees, and a
14 third were technicians.
15 Q. To whom did you report?
16 A. For approximately the first half of my
career there I
17 reported to Robert B. Seligman, and for the
second half Dr.
18 Max Hauserman.
19 Q. Now, I'm going to ask you as we go on here
a number
20 of questions about a number of topics. But I
want to
21 predicate my next two points on that you worked
there at
22 Philip Morris for on to 8 years; is that
correct?
23 A. That is correct.
24 Q. And did you see things and observe things
and find
25 things out that bothered you from a professional
point of

1892

1 view?
2 A. Well, yes, and discussed them with people
there.
3 Q. Well, that sort of answers my next
question. Did you
4 from time to time make your views known?
5 A. Yes, I did.
6 Q. When did you leave Philip Morris?
7 A. 1984.
8 Q. Under what circumstances?
9 A. I was terminated in July, and discussions
leading up
10 to that go back to, I believe, November or
December of
11 1983. So it was just of 1984.
12 Q. Why were you terminated?
13 A. There is a history going into that. I'm
not quite

14 sure at the time I understood. But at the end
of 1983, Dr.
15 Hauserman was asked by his boss Dr Wallace
McDowell,
16 Mr. Wallace McDowell, to ask that I would be
promoted to
17 Vice President of Research and Development.
18 I requested that not be done until
they were
19 willing to make that promotion. But Dr.
Hauserman
20 insisted on doing that. And they did it. And
21 subsequently within a few days after that Mr.
McDowell was
22 terminated, left like in just one day, he was
replaced by
23 Mr. James Remington.
24 And we had a meeting, did anything
change, did
25 you wish me now to be promoted now. And no,
they

1893
1 validated that I would still be promoted.
2 In the meantime, in the meantime my
wife had
3 also been announced that she would be promoted.
There was
4 another management change that involved Mr.
Shep Pollock
5 leaving the company. Mr. Pollock was Mr.
McDowell's boss.
6 And subsequently Mr. Remington's boss. He was
the
7 President of Philip Morris USA. So he left, my
wife was
8 told that she was no longer going to be
promoted.
9 Q. Did your wife work at Philip Morris?
10 A. Yes, she did.
11 Q. What position did she have?
12 A. She was Assistant Manager of what was
called the
13 green leaf stemery, which is where they process
the initial
14 purchased tobacco. My wife filed an EEOC
complaint against
15 the company. Subsequently, I was called into
the office
16 and I was told that I would no longer be
promoted. I asked
17 my boss, Dr. Hauserman what I should do about
that.
18 He suggested that I retain an
attorney. I
19 retained an attorney, wrote him a letter to
that effect.
20 He was on vacation at the time I wrote the
letter. And on
21 July 6th I was called into an office, he, my
boss was
22 called back, and they indicated that I would be
23 terminated.

24 Q. Did they give you a reason?
25 A. Insubordination.

1894

1 Q. Were you ever given a termination letter?
2 A. No.
3 Q. Were you insubordinate during your eight
years there
4 at Philip Morris?
5 A. I don't think so, but obviously they
thought so.
6 Q. All right. Let's turn now to some more
specific
7 things. Can you tell the jury what your group
did, as a
8 general matter, what type of work did they do?
9 A. The group was crafted to explore many
facets of
10 tobacco technology. Specifically, what
modifications could
11 be made to tobacco. I was very much interested
in the
12 biotechnology aspect of modifying tobacco.
13 So, we formed what we called the
Biomaterial
14 Science Division to study how we could change
tobacco so
15 when it was burned it would produce chemicals
that are
16 less toxic, less hazardous. We also tried to
change the
17 physical characteristics of cigarettes to
reduce things
18 like carbon monoxides and oxides of nitrogen
and things of
19 that type.
20 And we also early in my career
developed
21 computer models that would allow us to predict
how when
22 the cigarette is burned you change the flow of
chemicals
23 coming out of the cigarette into the smoker,
and into the
24 side stream so its physical and chemical
approaches to
25 modification and cigarette.

1895

1 Q. Did your group do biological research?
2 A. No, we did not.
3 Q. Was there a group there that did that?
4 A. Yes. That group reported to Dr. Tom
Osdene, and they
5 would do the biological research.
6 Q. Let's talk a bit about Dr. Osdene. What
group did he
7 head?
8 A. The name changed over the time that I was
there.
9 Originally he was called Director of Research,
and that's
10 why my title was Director of Applied Research.

And then

11 gradually many of the divisions that were
involved in Dr.

12 Osdene's work were transferred into my
directorate as we

13 called them.

14 And Dr. Osdene was, I think, towards
the end

15 called Director of Biochemical Research and
Extramural

16 Studies, or something like that. But basically
it was the

17 biochemical side of testing.

18 Q. Was he there throughout the entire period
of time you

19 were at Philip Morris?

20 A. Yes, he was.

21 Q. Did you come to know him personally as
well as

22 professionally?

23 A. Yes, I did. He, for example, helped me
get into some

24 of the local clubs because we traveled a lot on
business

25 together. Our offices were not very far apart.

We met at

1896

1 meetings, all of the time in my office, his
office, so it

2 became we both collected stamps, for example, so
we shared

3 a hobby.

4 Q. Now, did you discuss at any time with the
senior

5 management people, people there both in the lab
and the

6 management people, their views, their
professional personal

7 views on their relationship between smoking and
disease?

8 A. Yes, I did.

9 Q. With whom did you talk in the senior
management?

10 A. Well, all of the people that I worked with
and the

11 people that I reported to.

12 For example, Dr. Wakeham, Dr.
Seligman,

13 Larry -- Dr. Hauserman, Dr. Gannon, Dr. Osdene,
Dr. Dunn,

14 and people that I worked, who worked for me.
It was a

15 constant subject of discussion.

16 Q. Now, can you tell us what their views were
as to the

17 relationship between smoking and disease?

18 A. We were trying to make a safer product.
And in order

19 to make a safer product, you have to know what's
unsafe

20 about it.

21 So, we discussed the various means

by which
22 cigarettes cause disease. To put it another
way, during
23 the time I was there, no one stated, for
example, that
24 cigarettes don't cause disease. We were
looking at the
25 different chemicals that were produced from
smoke that

1897

1 could cause disease and how we could reduce
those
2 chemicals.
3 Q. Still, with respect to the senior
management people,
4 did any of them indicate to you that they
believed smoking
5 caused disease?
6 A. Well, yes. I mean, we had programs to
reduce the
7 causes of disease, yes.
8 Q. You are saying that the premise of such a
program is
9 you have to believe that smoking causes disease;
otherwise
10 you don't do the research?
11 MR. LOMBARDI: Objection, leading.
12 THE COURT: Sustained as to form.
13 BY MR. ADELMAN:
14 Q. What was predicated for that?
15 A. In science you have a hypothesis. And you
test the
16 hypothesis. Unless you can disprove the
hypothesis, you
17 must accept it. That's how science is done.
18 So, the hypothesis is smoking causes
disease.
19 And then you look at specifics as of how it
could cause
20 disease, and there was no one there who refuted
that
21 hypothesis. No one said cigarettes don't cause
disease.
22 Q. I want to broaden the question, putting
aside the
23 senior management people. Did you talk to the
various
24 scientists there over time and learn whether
they had an
25 opinion smoking causes disease?

1898

1 A. Yes, I did.
2 Q. And what was that opinion?
3 A. It was the same, there was no evidence
that would
4 suggest that smoking doesn't cause disease. The
predicate
5 for the research being done is that smoking
causes disease.
6 And we are trying to reduce the chemicals or the
things in

7 smoke that cause disease.
8 Q. Put it this way, did any of those
scientists or in
9 the years you were there ever say to you they
believed
10 smoking did not cause disease?
11 A. No.
12 Q. Now, did you come to know about an entity
called
13 INBIFO?
14 A. Yes.
15 Q. INBIFO, what is INBIFO?
16 A. INBIFO is an acronym for a German name for
an
17 organization that performs biological testing in
animals
18 and in, at the cellular level. It's called in
bitro in
19 animals and in vitro is in cells and test tubes
and so
20 forth. And it's located in Germany, Cologne.
21 Q. May I ask when you first learned about
INBIFO?
22 A. The research work that we were doing
required us to
23 have some understanding of whether or not the
changes we
24 were making were headed in the right direction
to make a
25 safer cigarette.

1899
1 And those tests were performed by
Dr. Osdene's
2 group. The cell level work was done in
Richmond,
3 Virginia. The animal testing was sent out,
outside of
4 Richmond, Virginia to be done either in Europe
or other
5 places. And INBIFO was the place where most of
the work
6 was sent out.
7 Q. When you first discussed or were informed
about
8 INBIFO, what was your understanding as to who
owned and
9 operated it?
10 A. My understanding, when it was first
explained to me,
11 was INBIFO was an independent company that would
perform
12 the research for us.
13 Q. Who told you that?
14 A. Dr. Osdene.
15 Q. Did there come a time that you learned
something
16 different about INBIFO?
17 A. Yes, later in my career, about the time
that it was
18 announced that I would be promoted, Dr.
Hauserman explained
19 to me, he was my boss, the Vice President of R

and D at

20 that time, that INBIFO was actually owned by
Philip Morris.
21 Q. That was about 1983?
22 A. Something like that, yes.
23 Q. Now, you began to talk a bit about the
topic I want
24 to ask you about and that is animal testing.
Did you in
25 your group do animal testing?

1900

1 A. No, we did not.
2 Q. Was animal testing necessary in order to
safely
3 market the product consumed by the public?
4 A. Based on my experience at Lever Brothers,
and one of
5 the reasons that Philip Morris said they were
interested,
6 I -- at Lever Brothers I was in charge -- I was
the senior
7 signatory on all the toxicology information that
would be
8 developed on products like Aim toothpaste, Close
Up
9 toothpaste, Wisk detergent, Dove bar soap,
Crest. There
10 wasn't a single product we sold that didn't
undergo the
11 animal and cell testing. So, it was required.
12 Q. What did you do about that since your
group didn't do
13 animal testing?
14 A. We, as I indicated, would provide our
results or the
15 modifications that we suggested to cigarettes to
Dr.
16 Osdene's group, and they would do the animal
testing
17 outside of Philip Morris and do cell level
testing within
18 the research center in Richmond, Virginia.
19 Q. When you say outside of Philip Morris,
where are you
20 referring to?
21 A. INBIFO, and there was also, as I
understood it, the
22 possibility that some of this could be
contracted to other
23 organizations besides INBIFO.
24 Q. And who told you that?
25 A. Dr. Osdene.

1901

1 Q. Did you think that was rather unusual that
a company
2 with Philip Morris did animal testing outside of
the
3 premises and particularly in Europe?
4 A. Yes, initially I asked Dr. Osdene why that
was so.
5 Q. What did he say?

6 A. And Dr. Osdene indicated that the reason
for doing
7 the testing in Germany particularly was that
they did not
8 want the results of those tests to be available
if in fact
9 the company was involved in litigation on safety
and
10 health.

11 Q. Did he give you any other reason?

12 A. No; that was the reason.

13 Q. All right. With respect to the animal
research at

14 INBIFO, what was your understanding as to why
Philip Morris
15 did it there?

16 A. Well, I just, one of the things he said
was that, I
17 mean, first of all, it's a qualified laboratory.

But the
18 second of all, that they had made the decision
that they
19 would do that.

20 And the other thing that was
discussed several

21 times with Dr. Osdene, Dr. Seligman, Dr.

Hauserman, Dr.
22 Helmut Gaisch from the Swiss subsidiary, was
that there

23 was an agreement among the tobacco companies
that they

24 would not do animal testing of their own

products or of
25 competitive cigarette products on the premise
of the, each

1902
1 of the tobacco companies, they would only do it
in one of
2 two ways.
3 One was, one way was if it was done
in Europe
4 or someplace else. The other way was if it was
done under
5 the aegis of the CTR, Center for Tobacco
Research or
6 through the Tobacco Institute.

7 Q. Now, about this agreement, Dr. Osdene told
you about
8 it?

9 A. Dr. Osdene, Dr. Seligman, Dr. Hauserman,
Dr. Helmut
10 Gaisch.

11 Q. Those gentlemen are all senior officials
at the R and
12 D facilities at Philip Morris in Richmond,
Virginia?

13 A. Except for Dr. Gaisch. Dr. Gaisch was Dr.
Osdene's
14 counter part at our European -- Philip Morris
had a
15 laboratory in Switzerland where he was director
of

16 research.
17 Q. Did you ever talk to Mr. Kuhn about the
agreement?
18 A. Yes, Mr. Kuhn, probably forgot a bunch.
Mr. Kuhn,
19 Mr. Carpenter, Dr. Charles, other people who
worked with
20 Dr. Osdone.
21 Q. Have you mentioned Dr. Wakeham?
22 A. No, I haven't.
23 Q. Now, you mentioned that you were a
director. Were
24 there other directors in the facilities?
25 A. Yes, there were at various times four and
then later

1903

1 five directors.
2 Q. Did you as a group meet from time to time?
3 A. We met approximately two to three times a
month. The
4 Vice Presidents of Research and Development
would call a
5 meeting of the Directors to provide information
from
6 management in New York coming down to the
directors, and
7 also to solicit our inputs, what was going on in
our
8 directors, as we called them.
9 So, we could communicate with each
other as to
10 what we were doing.
11 Q. With respect to the director group, was
this an
12 agreement referred to, was this agreement
referred to by
13 them?
14 A. It wasn't referred to. It was discussed
periodically
15 at the meeting in terms of things we could do
and could not
16 do.
17 Q. And of course Dr. Osdone was a member of
that group,
18 correct?
19 A. Dr. Osdone was a member of the group, and
we
20 discussed it. For example, we did do animal
testing on
21 nicotine pharmacology. And that subject came
up.
22 Specifically, I remember the question was, well,
if you
23 can't do it on safety testing, how can you do it
on
24 pharmacology.
25 And the answer was, well, that's not
safety.

1904

1 You are just studying the nature of nicotine.
So it was

2 done on that, that was considered okay.
3 Q. When you needed biological testing, as I
understand
4 your testimony, you had to go to Dr. Osdene and
have him do
5 it?
6 A. Yes, his groups.
7 Q. And that would be done in Europe.
8 MR. LOMBARDI: Objection.
9 THE COURT: Why don't you move on.
10 BY MR. ADELMAN:
11 Q. Did you in fact ask him to do research on
a
12 biological level?
13 A. Yes, we submitted our samples to him, and
he would
14 provide feedback to us concerning the results in
some
15 cases, in some cases we never found out.
16 Q. Let's talk about the instances where you
got results;
17 in what form did you get results?
18 A. If there were two levels, one is the local
level at
19 Philip Morris in Richmond, where we did cell
level testing
20 in the laboratories.
21 Those results were in the formulas
of reports
22 which we could see. And the other way we would
get
23 results is that I would be told to talk to Dr.
Osdene
24 personally about results which came back from
Europe, so
25 he would be the collector of those results, and
he would

1905
1 provide them to me.
2 Q. From what way did he provide those results
from
3 Europe to you?
4 A. Verbally.
5 Q. Did you ever receive written reports?
6 A. On two occasions I saw a written report
which he told
7 me I could not have a copy of because it had to
be
8 destroyed. And he subsequently took it back and
presumably
9 destroyed it.
10 I didn't see him actually do it.
11 MR. LOMBARDI: Your Honor, I would
move to
12 strike that.
13 THE COURT: Sustained as to the last
portion.
14 Disregard about what happened to reports that
were given
15 back.
16 BY MR. ADELMAN:
17 Q. Let me ask this question. Did Dr. Osdene

say
reports? 18 anything about who was going to destroy these
19 A. Yes.
20 Q. What did he say?
21 A. He said that he was going to destroy them.
It was
22 his mission to do that.
23 Q. Now, did this strike you as unusual?
24 A. Very unusual.
25 Q. Why?

1906
product 1 A. Well, I was used to coming from a consumer
shared by 2 company where those type of reports would be
understood the 3 everyone. On the other hand, you know, I
those reports 4 concern that the company had about not having
5 available.
6 Q. Did you learn, I'm sorry, did you finish?
7 A. Yes.
8 Q. Did you learn from Dr. Osdene why it was
that these 9 reports were destroyed?
10 A. Again, I was told when asked, when I asked
him, I was 11 told that they did not want to have the animal
test results 12 which showed negative health findings in their
files in the 13 United States in case of litigation.
14 Q. May we have 4218, please.
15 Sir, these will be projected on the
screens and 16 television.
17 MR. LOMBARDI: Your Honor, there is
an 18 objection. I ask that this be taken off and
have leave to 19 approach on it.
20 THE COURT: You can approach.
21 (The following discussion was
conducted at the 22 side bar between court and counsel, out of the
hearing of 23 the jurors, as follows:)
24 MR. LOMBARDI: Do you have a copy?
Were you 25 looking for a copy?

1907
was. 1 THE COURT: I just wondered what it
notes, which 2 MR. LOMBARDI: It's handwritten
3 obviously were written by Osdene. I don't
believe this 4 witness ever saw those notes during the time he
was at 5 Philip Morris. I also have an objection

because of the
6 document is hearsay, there is no.
7 THE COURT: What year are they?
8 MR. LOMBARDI: There is no date on
the notes,
9 I.
10 MR. ADELMAN: Your Honor, this was
already
11 introduced in evidence. There were some
questions raised
12 by the authorship of it -- this man knows Dr.
Osdene,
13 knows his handwriting, will be able to testify
that it was
14 authored by Dr. Osdene.
15 Number two, it describes the process
of
16 destroying documents and leads to questions
about Dr.
17 Osdene had a safe in his house in which he kept
documents
18 and eventually destroyed them.
19 THE COURT: You are saying he's
going to
20 identify that he knows Osdene's.
21 MR. ADELMAN: Yes.
22 That does not go to the hearsay
objection.
23 Even if you accept that's a document by Osdene,
there is
24 no foundation that this is a business record or
any other
25 record related to official Philip Morris
business.

1908
1 THE COURT: Where is the document?
2 MR. ADELMAN: May I bring it up,
your Honor?
3 THE COURT: Yes.
4 MR. ADELMAN: Your Honor, we submit,
first of
5 all since this is a co-conspirator statement,
your Honor,
6 there is a sufficient basis in this record to
see already
7 take Mr. Osdene is a co-conspirator.
8 These are perhaps part of the reason
he took
9 the Fifth Amendment if the court please.
10 MR. LOMBARDI: That does not go to
the question
11 of whether this is an admissible hearsay, your
Honor. He
12 needs to establish some kind of foundation to
make this
13 hearsay, or take it out of the hearsay rule.
It is not a
14 business record, and they will never get that
foundation
15 for it.
16 THE COURT: There is a time on it.
17 MR. ADELMAN: No, your Honor, but he

will say
during the
counsel's.
there.
is going
hearsay
They are

18 that the circumstances suggested it was written
19 8 years that he was there. To answer
20 THE COURT: Remind me again, he was
21 MR. ADELMAN: '76 to '84.
22 THE COURT: I'm just wondering if it
23 to be offered for the truth of assertions as a
24 matter.
25 MR. LOMBARDI: Look at the top.

1909
Cologne,
they are
already prima
agreement.
by a
court can
co-conspiracy
against 804
the Fifth
now, your
conducted in
that basis.
the
on that

1 trying to offer it for, ship all documents to
2 reference for destruction. That is their point
3 trying to make from this.
4 MR. ADELMAN: We have established
5 facie conspiracy. He testified there was an
6 Secondly, these are a statement made
7 co-conspirator to further the conspiracy as the
8 see.
9 Thirdly, putting aside the
10 statement, this is against penal interests
11 (B)(3). As we see later, this gentleman took
12 Amendment.
13 THE COURT: I'll allow it.
14 MR. LOMBARDI: Is my objection made
15 Honor?
16 THE COURT: Yes.
17 (The following proceedings were
18 open court.)
19 BY MR. ADELMAN:
20 Q. Are you able to see that over there?
21 A. I can see it here.
22 Q. All right, good. I'll question you on
23 Before you is Exhibit 4218. Do you recognize
24 handwritten or any of the handwriting, printing
25 document?

1910
Dr. Osdene.

1 A. Yes, I do.
2 Q. How are you able to do that?
3 A. I received many notes and comments from
4 And this is his one of the characteristic things

that he
you look at
of how he
8
talking
paragraph one
you read
Number 2, it
destroyed?
with the
might help

5 always did was to refer to him as TSO. And if
6 the bottom, the TSO is extremely characteristic
7 referred to himself in all instances.
8 Q. For the benefit of the jury, where in the
9 paragraphs of this document is that TSO you are
10 about?
11 A. It's on point 8.
12 Q. All right. And that's highlighted here?
13 A. Right.
14 Q. All right; thank you.
15 Now, the document states, at
16 there, ship all documents to Cologne by -- can
17 the next word?
18 A. No, I can't.
19 Q. Okay. Then it says keep in Cologne.
20 says okay to phone and telex. These will be
21 A. Correct.
22 Q. Is that, are those statements consistent
23 things Dr. Osdene told you?
24 A. Yes, they are.
25 Q. Then if you will, paragraph 6, perhaps you

1911
be sent,
destroy them.
he told
his house
were both
received from
They provided
read them.
this
out?
in writing

1 us by reading, since you know his handwriting?
2 A. If important letters or documents have to
3 please send to home. I will act on them and
4 Q. And is that statement consistent with what
5 you?
6 A. Yes, Dr. Osdene told me he had a safe in
7 where he kept both his stamp collections. We
8 stamp collectors. And documents that he
9 INBIFO, he would read them. There provided.
10 information to us, and destroy them after he
11 Q. Now, do you see a reference to INBIFO in
12 document?
13 A. Yes, I do.
14 Q. Where is that?
15 A. Point 7.
16 Q. Just for the jury's benefit again, help us
17 A. Advisory Lander, and where I think that's
18 it says re: INBIFO. The last part I can see

clearly.

19 Q. All right; thank you.
20 May I have 1882. All right, this is
Exhibit
21 1882. Did you ever, have you ever seen this
document
22 before?
23 A. Yes, I have.
24 Q. All right, the front page is before you.
What does
25 that relate to if you can tell us?

1912

sometimes

a new

attacks made

available outside

product or

before?

before they

part of

talking about

experimental

effect in any

experience at

part of our

the Vice

1 A. Well, the area of smoking and health was
2 called defensive research, as opposed to making
3 product which is offensive research.
4 Q. Defensive research. What does that mean?
5 A. It means defending the company from
6 against it into findings that may become
7 the company.
8 Q. What's the other type of research?
9 A. Offensive research refers to making a new
10 developing something new.
11 Q. Had you ever engaged in defensive research
12 A. Not in the context of refuting things
13 came out, no.
14 Q. That was unusual for you?
15 A. Yes.
16 Q. All right. Next page, please. Again, as
17 this document, highlighted sections C and D,
18 the objectives for INBIFO. Maintain
19 capability to test for appropriate biological
20 situation?
21 A. Yes.
22 Q. What does that mean to you from your
23 Philip Morris?
24 A. Well, these documents were discussed as
25 planning meetings at the directors level with

1913

is to make

to perform

smoke,

4 everything from mouse skin painting to
inhalation studies
5 of all kinds.

6 Q. Does the phrase biological effect have any
7 significance?
8 A. Well, in many cases synonyms are used to
make it
9 easier to read, so it is less -- more palatable
to people.
10 So, for example, instead of saying
carcinogenicity or
11 mutagenicity.

12 MR. LOMBARDI: Objection, your
Honor. There is
13 no foundation that this witness has knowledge
of who wrote
14 this document or what the purpose of that
person was in
15 writing it.

16 THE COURT: Sustained; I don't
think.

17 BY MR. ADELMAN:
18 Q. Let me rephrase it this way. Did you come
to learn
19 while at Philip Morris certain code words on the
documents
20 you saw?
21 A. Yes.
22 Q. Is biological effect a code word?
23 A. Biological effect and biological activity
are code
24 words.
25 Q. What are they code words for?

1914
1 A. As I indicated, code word is a synonym for
something
2 that sounds worse, so mutagenicity,
carcinogenicity,
3 teratogenicity, were usually lumped under the
heading of
4 biological effects or biological activity, so
you wouldn't
5 normally say mutagenicity.

6 Q. Could we have the next page, please.
7 And again the last page of the
documents I'm
8 going to ask you about, why do we need INBIFO,
discussing
9 on section D, subpart 2. Specific concern can
be
10 terminated at will as required without delay.

11 What does that mean to you?
12 A. The conversation was, if the experiment
was not
13 providing any useful information or was
providing
14 information that was not to be published, it
could be
15 terminated.

16 Q. What do you mean useful information?
17 A. Well, in one case we are trying to
determine whether
18 we are making products safer. So, they are
testing it
19 there to provide information on whether you have

succeeded
20 in that goal.
21 And the other case, you are trying
to refute
22 studies that are being published in the
literature
23 concerning smoking and health.
24 So, there is two reasons for
terminating it.
25 One is if it's not being useful in your
program, and the

1915
1 other is if it doesn't provide information that
can be
2 used on behalf of the company.
3 Q. You mean negative results?
4 A. Yes.
5 Q. All right; thank you.
6 Now, may I have Exhibit 1736,
please.
7 This may be a little difficult. So,
you will
8 probably do better with your copy.
9 Do you have before you 1736?
10 A. Yes, I do.
11 Q. Do you recognize that?
12 A. Yes.
13 Q. And it talks about proposed study by Levy.

Who's the
14 Levy that's being referred to?
15 A. Doctor Carolyn Levy was the scientist who
worked for
16 Dr. William Dunn. And she was in charge of
looking at the
17 pharmacological, pharmacological effects of
nicotine.
18 MR. LOMBARDI: Note my objections.
Before we
19 go further, I don't believe the witness has
testified that
20 he has seen this document, or certainly within
the time
21 period that he was employed at the company.
22 MR. ADELMAN: Sure. I'll take that
up.
23 Q. Were you employed at the company November
3rd, 1977?
24 A. Yes, I was.
25 Q. Have you seen this document before?

1916
1 A. Yes, I have.
2 Q. Now, are you familiar with the project of
Miss Levy
3 there?
4 A. Yes, I'm familiar with the discussion
about this
5 proposed study.
6 MR. LOMBARDI: Excuse me, your
Honor. I
7 apologize. I may have misunderstood. I
thought he said

8 not while he was employed at the company, in
which case
9 this is a document that doesn't fall within his
percipient
10 knowledge in the 1964 to '94 time frame.
11 THE COURT: Didn't you say you were
employed
12 with the company at this time.
13 THE WITNESS: Yes, I was.
14 MR. LOMBARDI: I apologize.
15 BY MR. ADELMAN:
16 Q. I believe you were telling us about a
meeting or
17 discussing about her projects?
18 A. Yes. We had a discussion that occurred in
the
19 offices, where we shared close offices. I had
come down
20 and was talking with Dr. Dunn and sort of asked
about what
21 I thought about the study. And I thought that
it was a
22 good idea to run the study.
23 Q. Now, I refer you to the paragraph there,
in the
24 exhibit, that says if she's able to demonstrate
as she
25 anticipates no withdrawal effects of nicotine,
we'll want

1917
1 to pursue this avenue with some vigor.
2 If, however, the results of nicotine
are
3 similar to those gotten with morphine and
caffeine, we'll
4 want to bury it. Do you see those sentences?
5 A. Yes, I do.
6 Q. Did you discuss with anybody the notion of
burying
7 this certain results?
8 A. I discussed this with Dr. Dunn, and, you
know, tried
9 to indicate to him that if they were going to do
it, my
10 thinking was that they should publish it anyway,
especially
11 since publication did not necessarily mean you
send it
12 outside the company.
13 The publication in a company like
Philip Morris
14 can be you just write a report, and it's
present in the
15 library as part what we call central files.
So, I didn't
16 see any need to bury it, even if the results
were
17 negative, it wouldn't have gotten outside of
the company.
18 Q. What did Dr. Dunn say?
19 A. I don't recall any objection to my point
of view.

completed? 20 Q. Do you know whether this project was
21 A. I don't recall.
22 Q. What was your reaction to the notion set
forth here
23 in the exhibit of burying results of certain
research?
24 A. I indicated I didn't see any need for it,
especially
25 since reports that are generated about research
within

1918
1 Philip Morris would go only into central files.
2 Nobody outside the company would see
them. So,
3 I really didn't see any need to bury any
research.
4 Q. Let me turn now to one of your colleagues,
Dr.
5 DeNoble. Can you tell us whether he worked with
you during
6 your tenure there at Philip Morris?
7 A. He didn't work with me. He didn't work
for me. He
8 worked for Dr. Dunn in the behavioral
pharmacology area,
9 and Dr. Dunn reported to Dr. Osdene at that
time.

10 Q. May I have Exhibit 2555 displayed.
11 And the inner pages. Can you read
that, sir?
12 A. I can read the one in front of me.
13 Q. There we go, do you recognize that page?
14 A. Yes, that's the front page of a report
that -- the

15 type of report I was just referring to, that
stays within R
16 and D, doesn't go outside, so.
17 Q. And you are copied on it?
18 A. Yes.
19 Q. And what was the subject of the report?
20 A. This was the semi-annual, it was the
pharmacology
21 annual report.
22 Q. Is there, within the report, reference to
project of
23 Dr. DeNoble's regarding nicotine?
24 A. Dr. DeNoble was studying the effects on
various
25 reinforcers in rats. And it indicated here that
he found

1919
1 acetaldehyde was a reinforcer for nicotine.
2 Q. What's the significance of that finding?
3 A. Well, as discussed at the time and
presented later,
4 the finding is that it implies that acetaldehyde
in smoke
5 would enhance the effect of nicotine.
6 Q. Did Dr. DeNoble continue his research?
7 A. Find the date on this, Dr. DeNoble's

research was
in June
months.
which his
New York
was
which the
matter of
discussed.
meetings?
Research and
time the
time it was
Dr. Osdene,
1920
about which
were going
representative
who discussed
that they
about
in New
should be
indicated.
information in

8 terminated at the end of 1983. This was written
9 1st, I think that's 1983, so for another few
10 Q. Are you aware of the circumstances under
11 research was terminated?
12 A. Yes, I am.
13 Q. What are they?
14 A. The research was closed down by order from
15 City from the headquarters company, because it
16 indicated to us that it caused, it proved data
17 company did not want to have in the records.
18 Q. Were you present at any meetings where the
19 closing down this research was discussed?
20 A. I was present at two meetings where it was
21 Q. Can you briefly tell us about those
22 A. It was discussed in our Vice President
23 Development meetings Dr. Hauserman, and at that
24 other directors were present, I believe at the
25 Mr. Lou Torano, Mr. Leo Myer, Mr. Dick Thomson,
and myself.
So we discussed we had concerns
projects were going to be closed and which ones
to be allowed to continue.
It was also discussed with a
from New York who came down, Mr. Fred Newman
only with the directors the kinds of projects
might be closing down.
9 Q. When you say New York, you are talking
10 corporate headquarters at Philip Morris?
11 A. Yes, Philip Morris corporate headquarters
12 York.
13 Q. What position did Mr. Newman hold?
14 A. I believe he was Assistant Counsel.
15 Q. And what did he say about why the projects
16 terminated?
17 A. He indicated the same as Dr. Hauserman
18 The company did not want to have negative
19 the files concerning the addictive nature of

nicotine or

20 anything having to do with animal testing.

21 Q. Now, this happened in 1983, correct?

22 A. Yes.

23 Q. What was your reaction by that time, by
that point in
24 time to this, closing down of Dr. DeNoble's
research?

25 A. A bit confused. This happened around the
same time

1921

1 that it was announced that I was going to be
promoted. And

2 at the time I think the announcement had been
made when it

3 was closed down.

4 And one of the things about my
promotion that I

5 was looking forward to was sort of opening up
things more

6 and having more widespread dissemination of
information.

7 So, we had quote a bit of
conversation about

8 the implications of the company's direction
with regard to

9 what they were willing to do or going to do.

10 Q. You were concerned about this?

11 A. Yes.

12 Q. Let me turn to Mr. Dunn for a second.
What position
13 did he hold?

14 A. Dr. Dunn was a principal scientist.

15 Q. Was he a person above you in the hierarchy
or below

16 you?

17 A. No, he was a person one level below;
principal
18 scientist is below a director.

19 Q. And what was his reputation generally
there?

20 A. It was excellent. For example, he was
sort of the

21 staff psychologist. He gave psychological tests
to people

22 who came to work for us and wrote up a report,
was relied

23 upon to help us select people that, you know, we
felt were

24 outstanding performers, people of that type.

25 He was well published and well known
in the

1922

1 area of nicotine use and behavioral effects
associated

2 with nicotine. And I believe he was held in
high regard.

3 Q. Did you ever discuss with Mr. Dunn, the
relationship

4 between smoking and disease?

5 A. With Dr. Dunn, yes.

6 Q. And what was his view, that he told you?
7 A. Well, again, Dr. Dunn never -- any
conversation that
8 I had with him, indicated that smoking didn't
cause
9 disease; it was an accepted hypothesis.
10 Q. Did you discuss the matter of addiction
with Dr.
11 Dunn?
12 A. On several occasions, yes.
13 Q. And what did he say?
14 A. Dr. Dunn indicated that under the
definitions as he
15 understood them that he felt that nicotine would
have to be
16 is considered addictive.
17 Q. If I may?
18 A. Thank you.
19 Q. At the time Dr. Dunn, or Mr. Dunn made
that remark to
20 you that his views that nicotine was addictive,
do you know
21 what Philip Morris' public position was
regarding whether
22 nicotine was addictive?
23 A. I really, you know, don't recall public
statements at
24 that time.
25 Q. Okay. Let me turn now to another topic.
Are you

1923
1 familiar with whole product testing?
2 A. Well, yes.
3 Q. What is that?
4 A. Whole product testing is the concept that
any product
5 that you are going to sell to people, that is
going to be
6 used by people, should be tested in the form in
which it is
7 actually sold.
8 Like with toothpaste or soaps or any
consumer
9 product.
10 Q. In other words, testing the ingredients
alone doesn't
11 satisfy professional scientific needs; is that
right?
12 A. That's correct. You can test ingredients
and
13 separately they can be more or less harmful than
when you
14 put them together. And my experience at Lever
Brothers was
15 detergents and soap and toothpaste, we saw lots
of
16 incidents of that. You can test an ingredient,
it would be
17 okay, and you put it in a soap and soap would
help it
18 penetrate your skin and cause irritation.
19 In the final product, where it was

all put
separately
request to
modifications to

20 together, it would cause harm. But if you
21 tested them, they didn't do that.
22 Q. Thank you, sir. At Philip Morris did you
23 have whole product testing done on cigarettes?
24 A. We wished to have the final, we made
25 cigarettes, and the idea was that you make this

1924

1 modification and if that modification was going
to be used
2 in a Marlboro, for example, that the
modification should be
3 tested in the Marlboro cigarette.
4 Q. So, we can understand it, the jury can
understand it,
5 you mean with respect to this whole cigarette,
the whole
6 testing the cigarette that's marketed or
cigarette that
7 comes out of the lab on an experimental basis?
8 A. The cigarette that is marketed, for
instance, you can
9 test some of these safety features we thought we
were
10 doing. You can test it by putting the cigarette
together
11 with only ripe tobacco or only burly. And do a
test.
12 You really don't know whether you
made progress
13 until you test it in the final product you
intend to sell.
14 Q. This was all with the purpose of trying to
achieve a
15 safer cigarette?
16 A. Yes.
17 Q. Did you ask to have whole product testing
done?
18 A. I actually spent a lot of time at Philip
Morris under
19 the impression that whole product testing was
being done.
20 Q. Who gave you that impression?
21 A. Dr. Osdone.
22 Q. Did you find out definitely?
23 MR. LOMBARDI: I object if we can
establish a
24 foundation as to when he found out?
25 BY MR. ADELMAN:

1925

1 Q. Fair enough. When did you first learn
from Dr.
2 Osdone that whole product testing would be done?
3 A. From 1977, remember I started there in
'76, when I
4 became director of applied research and was
given the
5 mission of getting involved in these projects,

the issue

6 came of up how it was going to be tested.
7 Dr. Seligman was my boss at that
time. And he
8 indicated that Dr. Osdene would take care of
the testing
9 and I could consult with Dr. Osdene to get the
results.
10 And Dr. Osdene indicated that the whole product
11 advertising or the testing of the finished
products would
12 be done in Europe or outside of the laboratory.
13 Q. When did he tell you that; if you know?
14 A. Some time in 1966. I don't remember. I
mean, it was
15 several, every project that we had, that related
to smoking
16 and health issue, the issue comes up with how
you test to
17 know whether or not you are making progress, and
in
18 reducing mutagenicity carcinogenicity of the
product.
19 Q. Did Dr. Osdene tell you why it was that
whole product
20 testing if it was done at all had to be done in
Europe?
21 A. Again, yes. Because he indicated that
those results
22 should it show that the product was carcinogenic
or
23 mutagenicity were not desired in the files of
Philip Morris
24 in the United States.
25 Q. Did he give any other reason for that?

1926

1 A. No.
2 Q. Did you discuss the issue of whole product
testing
3 being done outside with anybody else at Philip
Morris?
4 A. Yes. Dr. Seligman, Dr. Hauserman, Dr.
Gaisch that I
5 mentioned, Mr. McCuen, Mr. Carpenter, Dr.
Charles, quite a
6 few people.
7 Q. Did you learn from these discussions what
the
8 position or policy of other cigarette companies
was with
9 respect to whole product testing?
10 A. Yes, as part of -- I understood there was
an
11 agreement they would not perform such testing on
their own
12 products or on competitors' products, within the
United
13 States.
14 Q. And who told you about this agreement?
15 A. Well, that's Dr. Osdene, Dr. Seligman, Dr.
Hauserman,
16 Dr. Gaisch, Mr. McCuen, the same people.

17 Q. They all said that?
18 A. Yes.
19 Q. Now, were you ever given the results of
whole product
20 testing?
21 A. I never saw written results that
contained, other
22 than tar and nicotine, FTC biological testing.
With regard
23 to biological testing, I was only given results
verbally by
24 Dr. Osdene as to which things were better or
worse.
25 Q. So, are you telling us that you never
received any

1927

1 results of whole product testing?
2 A. That's right. Not that I could look at
and see that
3 in fact it was done.
4 Q. Were you concerned about that?
5 A. Well, yes. And it was discussed not only
with Dr.
6 Osdene but with my superiors, Dr. Seligman and
later Dr.
7 Hauserman.
8 And the answer was that we needed to
rely on
9 what Dr. Osdene was doing and his result, the
information
10 that he had.
11 Q. From overseas?
12 A. Yes.
13 Q. But you never saw that?
14 A. That's correct.
15 Q. Now, what is separate ingredient testing?
16 A. Well, separate ingredient testing is to
make sure you
17 want to know both things. You want to know all
the
18 ingredients, whether you are putting them
together and
19 separately, because if you are putting an
ingredient into a
20 product that is not good for that product, you
need to know
21 that second, separately before you go ahead and
put it in
22 the product.
23 Q. Is that something you wanted to do in the
course of
24 your work there at Philip Morris?
25 A. Yes, because it helps you understand how
the

1928

1 ingredients perform separately. And in fact
that's the
2 bulk of the work that was carried out at Philip
Morris that
3 you consider bright and burly and oriental, and
the

4 different forms of tobacco to be separate
ingredients.
5 That's basically what was tested.
They would
6 test the different kinds of bright, stems,
different kinds
7 of reconstituted tobacco, so there was a lot of
testing of
8 those specific things that went into making the
cigarette.
9 Not the flavor additives and those things, but
the
10 different ingredients, the blends.
11 Q. I guess I should ask you this. In your
view is
12 complete, separate ingredient testing done?
13 A. No, certain ingredients were not tested.
14 Q. What were they?
15 A. Those were ingredients that were added in
as
16 additives, flavors, for example, that were not
tested
17 separately. They were only tested mixed in with
other
18 things.
19 Q. Why should they have been tested?
20 A. Well, we had a long discussion about the
reliance on
21 what's called the grass list. Grass means
generally
22 regarded as safe. And it was generally devised
by
23 government agencies for foods.
24 So, you could have something in the
food if it
25 is grass at several levels, then you don't need
to test

1929
1 it.
2 But the problem is silica, finely
ground sand
3 is grass for eating. It's used in toothpaste,
silica
4 bases in toothpaste. You can put it in foods.
But if you
5 were to inhale that, that is not a good thing
to inhale,
6 silica. It leads to silicosis.
7 So, it was my argument with Dr.
Osdene that
8 reliance on the grass list was not adequate to
determine
9 the safety of some of the additives that were
used.
10 Q. Do you recall what he said?
11 A. Dr. Osdene didn't say very much on it,
other than the
12 fact that they were going to rely on the grass
list.
13 Q. All right. May I have 2292, please.
14 MR. LOMBARDI: Your Honor, I do not
believe

15 this was in the exhibits that were turned over
to us.
16 He's correct.
17 BY MR. ADELMAN:
18 Q. Thank you. Have you found 2292 in your
books?
19 A. Yes, I have.
20 Q. Can you tell us what that is by looking at
the front
21 page?
22 A. Yes; this is a report about a particular
analytical
23 method concerning one of the most potent class
of
24 carcinogens, nitrosamines, in cigarette smoke.
25 Q. May I have the next page, please.

1930

1 Now, we have moved to page 2 and
highlighted
2 this one sentence there, doctor. If you will
focus on it.
3 You told us earlier in your testimony that the
phrase
4 biological activity was used as a code word.
Do you see
5 the phrase biological activity here?
6 A. Yes.
7 Q. And using your knowledge of the code, can
you
8 translate that sentence?
9 A. Yes.
10 Q. -- into English if you will?
11 A. Biological activity in that context means
either
12 carcinogenicity or mutagenicity. Mutagenicity
is probably
13 more specific.
14 Q. Cancers?
15 A. Well, it causes changes in cells, causes
mutations in
16 cells which can lead to cancer.
17 Q. Do you know why that code word biological
activity
18 was used?
19 A. I think it's partially because people who
are dealing
20 with issues like this, you know, don't want to
see the
21 blunt word up there, carcinogenicity,
mutagenicity.
22 Q. All right. On the matter of code words,
was there
23 any code word, if you now, for addiction in
documents?
24 A. Yes, habituation was frequently used
whereas a
25 synonym for addiction.

1931

1 Q. Now, referring again to Dr. Osdene, did
you ever have
2 occasion to discuss with him in general the

controversy

3 regarding smoking and health?

4 A. On many occasions, yes.

5 Q. And did he describe to you his role with
respect to

6 that controversy?

7 A. Dr. Osdene indicated to me on many
occasions that

8 part of his job and one of the reasons why he
was shedding

9 a lot of his responsibility into my directorate,
that is

10 reducing the number of people reporting to him
that

11 reported to me, is because he would have an
increasing role

12 in trying to maintain the smoking and health
controversy.

13 That is, to mount attacks against
published

14 information that would tend to indicate that
negative

15 things about smoking and health.

16 Q. What did you understand him to be telling
you when he

17 talked about maintaining the controversy.

18 MR. LOMBARDI: Objection.

19 THE COURT: Sustained.

20 BY MR. ADELMAN:

21 Q. Let me have Exhibit 2251, please. Here is
a 1981

22 document; have you seen this before, sir?

23 A. Yes.

24 Q. And this one has to be related to Surgeon
General's

25 report. And I refer you to the portion of this
memo

1932

1 written by Dr. Osdene, highlighted at the
bottom. "It is

2 therefore vital that we take some kind of
measured

3 countersteps to these attacks. These may be
divided into

4 two sections." Is that the kind of thing you
mean by

5 maintaining the controversy?

6 A. Yes, and it's explained more on the next
page.

7 Q. Yes, if well, next page please.

8 Focusing now on the second sentence
there.

9 "Due to the major legal problems, it would seem
that such

10 experimentation would have to be carried
outside of the

11 U.S., but should, in my opinion, constitute
major sound

12 research to determine the facts in many of the
13 allegations."

14 Again, is that along the same lines?

15 A. That's exactly the kind of discussions

that we had,
16 and I'm copied on this memo.
17 Q. You got this memo?
18 A. Yes; it is on the next page.
19 Q. There you are.
20 Let me ask you, sir, is this the
sort of
21 defensive research you mentioned earlier in
your
22 testimony?
23 A. Yes.
24 Q. Did you ever ask to learn from Dr. Osdene
what his
25 personal position was with respect to the
relationship
1933
1 between smoking and disease?
2 A. With specific respect to emphysema, he
stated on at
3 least one occasion that I can recall very
clearly, and we
4 were talking about causation, various modes of
how
5 carcinogens work and how they attack the cells,
and he made
6 the statement that while carcinogenesis in many
cases is
7 difficult to prove, you certainly didn't have
that trouble
8 with emphysema because emphysema is caused by
simple
9 multiple attacks on the tissue which cigarette
smoking will
10 do.
11 So, he indicated that he felt if the
company
12 was attacked on the basis of cigarette smoking
causing
13 emphysema, that they had very, very shallow
grounds on
14 which to stand.
15 Q. What kind of grounds?
16 A. Shallow, there was no defense he could
think of that
17 would, that carcinogenicity tests are very
difficult to
18 perform. So, you can always second guess the
guy who
19 performed the test. With emphysema, the
epidemiological
20 evidence was so strong that he didn't feel he
could mount
21 the same defense.
22 Q. This is Dr. Osdene?
23 A. Yes.
24 Q. Do you know what the company's public
position at
25 that time was with the relationship between
smoking and
1934
1 emphysema?

2 A. Again, we are not -- we were not made
aware of
3 publications of the company.
4 Q. Referring to Dr. Osdene, at this point had
you ever
5 had any discussions with him about his personal
situations
6 regarding smoking?
7 A. Well, during the course of his second
wife's
8 pregnancy, we had a discussion. He had given up
smoking
9 because both he and his second wife --
10 MR. LOMBARDI: I object to the
relevance of
11 personal.
12 THE COURT: Sustained.
13 BY MR. ADELMAN:
14 Q. All right. Now, with regard to the safer
cigarette,
15 do you recall a research project involving
polonium, I'm
16 pronouncing that correctly, polonium?
17 A. Correct.
18 Q. What is polonium?
19 A. The specific isotope of polonium in
question is
20 polonium 210, and it is a by-product, comes in
with a
21 little bit of uranium, is in fertilizer.
22 And what happens is when they use a
lot of
23 fertilizer, phosphated fertilizer in growing
tobacco, two
24 things happen. Some of the uranium turns into
polonium.
25 Some of the uranium itself gets inside of the
stem itself,

1935
borne
1 and other parts of it is picked up through air
leaves.
2 particles that stick on the surface of the
3 And in the late 70's, this was
demonstrated by
4 taking tobacco and washing it by Dr. Robert W.
Jenkins and
5 Dr. Mary Ellen Counts where they determined
that by
6 washing tobacco, you could wash off the part
that was on
7 the outside, about half of the polonium 210.
8 Q. Was this polonium project toward trying to
develop a
9 safer cigarette?
10 A. Yes, one of the four major concerns about
smoke was
11 that very tiny amounts of radioactive materials,
should
12 they become lodged in the lung, obviously would
not be very
13 good when in fact the radioactive particle

decayed.

14 So, polonium was very concerned
because it had
15 been found on tobacco. And I believe
researchers from I
16 think it's Texas A and M had published that
this might be
17 a mechanism for causation of cancer from
smoking.

18 Q. Was the polonium research completed?
19 A. Well, the thing that was done in that
particular case
20 is about 1981, Dr. Osdene's group sets up what's
known as a
21 low level laboratory. The object of that was
simply to
22 measure the radioactivity of things used in the
tobacco
23 making process and some of the tobacco itself,
to make sure
24 or try to make sure or try to reduce the
incidents of those
25 materials being used in the manufacture of
tobacco

1936
1 products.
2 Q. All right. Was that project, polonium
project
3 completed?
4 A. Yes, it was completed by '82 or '83. It
was being
5 used during that period.
6 Q. Was there ever an occasion when you met or
became
7 familiar with two assistant general counsels
from the
8 company regarding that project and its
offspring?
9 A. Well, this, the low level laboratory and
the
10 measurement of polonium was, or the measurement
of
11 radioactive materials, wasn't necessarily
restricted to
12 polonium because other things could be picked up
by this
13 was indicated as being one of those projects of
concern at
14 the end of 1983, that potentially this project,
you know,
15 is an admission that you have bad things in the
product
16 that could cause cancer. And it might be one
that they
17 would shut down.
18 Q. Well, that invites some questions.
19 First of all, who voiced the
concern?
20 A. Dr. Osdene asked the question of Mr.
Newman at the
21 meeting that we had. And so Dr. Osdene voiced
the concern

22 about whether that project would be --
23 MR. LOMBARDI: Your Honor, this is,
as I
24 understand it, a privileged conversation at
this point,
25 Mr. Newman being an in-house lawyer for Philip
Morris.

1937

1 MR. ADELMAN: Could we be heard,
your Honor, at
2 the bench.
3 THE COURT: Yes.
4 (The following discussion was
conducted at the
5 side bar between court and counsel, out of the
hearing of
6 the jurors, as follows:)
7 MR. ADELMAN: If I may approach,
your Honor.
8 He will testify that this meeting,
the lawyers,
9 the in-house lawyers from the company told him,
as he is
10 suggesting here, that this project should be
stopped
11 because it would show things that would cause
them to have
12 civil liability.
13 It seems to me under the issues, the
court
14 would be well within its balance to find that
this comes
15 under the crime fraud exception; that the
attorney/client
16 privilege wouldn't apply here.
17 THE COURT: You want to respond?
18 MR. LOMBARDI: I don't think we are
in the
19 territory of the crime fraud exception here,
your Honor.
20 There was a series of requirements that have to
be met.
21 And simply coming up and saying in the middle
of testimony
22 this falls under the crime fraud exception is
not
23 sufficient to carry that burden.
24 MR. ADELMAN: If I may, your Honor,
it seems to
25 me two attorneys from the, coming down and
telling them to

1938

1 stop research on the grounds it might result in
liability.
2 In other words, the true facts being suppressed
and
3 suppressed in order to keep the company from
being sued
4 borders on crime and certainly fraud.
5 THE COURT: Well, just a couple
things. Have

6 you made a record on this, and if you did in
discovery on
7 this issue, do we need to voir dire briefly
what the
8 circumstances were?
9 MR. COUGHLIN: I don't think you do,
your
10 Honor. I think they know the foundation of
this witness's
11 testimony. They know what he's going to say.
They know
12 that he believes they were prevented from doing
stuff
13 because of the lawyers. The lawyers were
involved in the
14 operations of the business. So, right there
that -- that
15 waives the privilege.
16 THE COURT: The one question I think
17 specifically is, was this more of a managerial
decision in
18 terms of --
19 MR. COUGHLIN: Managerial.
20 THE COURT: I think they are at a
disadvantage
21 if some attorney was interested in research,
then
22 attempted to secret evidence or perpetrate a
fraud.
23 MR. ADELMAN: If I may, your Honor.
24 THE COURT: Let me do this. Why
don't we deal
25 with what he actually says.

1939
1 (The following proceedings were
conducted in
2 open court.)
3 THE COURT: We are going to take --
you'll need
4 to go back to the jury room. Don't go
anywhere, leave the
5 pads face down, and we'll come get you as soon
as we can.
6 (The jurors withdrew from the
courtroom and the
7 following proceedings were conducted in open
court:)
8 VOIR DIRE EXAMINATION
9 THE COURT: Do you want to relate
again what
10 the circumstances of this conversation were?
11 THE WITNESS: I talked earlier about
the
12 conversation.
13 THE COURT: Talk into the
microphone.
14 THE WITNESS: Sorry.
15 We had this meeting to discuss why
Dr.
16 DeNoble's project was closed down. And this is
the same
17 meeting that we talked about earlier, where a

meeting was
18 called to explain. We had two meetings. One
was by the
19 Vice President of R and D which was Dr. Max
Hauserman, and
20 the Director, the second meeting was Mr. Fred
Newman came
21 from New York City for the purpose of
explaining to us why
22 the project was shut down, Dr. DeNoble's
project.
23 During the course of that meeting
Dr. Osdene
24 inquired as to what other kinds of projects had
been shut
25 down, and this came up as being one of those.

1940
1 THE COURT: Okay, and what do you
say occurred
2 in terms of the conversation.
3 THE WITNESS: Dr. Osdene asked when
other
4 projects would be shut down. The answer was
yes, probably
5 will. He said like what? As far as I can
recall, there
6 was some conversation back and forth.
7 And I remember this one being
brought up as
8 well: Does that mean that this project for
measuring
9 radioactivity should go on or not go on? At
that
10 particular point it was said, well, it may be
one, but we
11 don't want to keep going.
12 THE COURT: Do you want to make any
other
13 inquiry?

14 MR. ADELMAN: If I may.
15 Q. Doctor, was there any discussion during
this meeting
16 about the civil liability concerns?
17 A. No.
18 THE COURT: Okay. We'll --
19 BY MR. ADELMAN:
20 Q. Was there any discussion about whether
completing a
21 project such as this would cause the company to
be subject
22 to lawsuits?
23 A. No, just a question of what the company
was going to,
24 what projects was going to be allowed and not
allowed.
25 THE COURT: Okay, why don't you get
the jury,

1941
1 and I'll sustain.
2 MR. ADELMAN: Your Honor, may I ask
him one

3 more question?
4 THE COURT: I think he's answered
twice the
5 questions where you led him.
6 MR. ADELMAN: Well, if I may with
the court's
7 permission.
8 THE COURT: Go ahead and ask.
9 BY MR. ADELMAN:
10 Q. Yes. Did Mr. Hauserman say anything about
the matter
11 of liability?
12 A. Dr. Hauserman?
13 Q. Yes, sir?
14 A. Well, indicated, as I said earlier, that
we were
15 concerned about which projects were going to be
shut down
16 because of the not having the negative
information, the
17 same as for the DeNoble project.
18 Q. What's the negative information?
19 A. Well, in the case of the DeNoble project,
the
20 negative information is showing that nicotine is
addictive.
21 In this project it's -- the negative information
is showing
22 that your product contains radioactive
materials.
23 Q. If I may, why would it be negative to the
company?
24 A. Because it would be an indication or
direct proof
25 that your product contained radioactive
materials, which

1942

1 are known to cause cancer.
2 THE COURT: Again, what was the
status of the
3 investigation at that time?
4 THE WITNESS: It was up and running.
5 THE COURT: Had you gotten any
results yet?
6 THE WITNESS: My understanding from
Dr. Osdene
7 was they had already removed some products from
use that
8 would otherwise have been used if they hadn't
had that.
9 THE COURT: Okay, I still would find
that there
10 is, the plaintiff has failed to establish the
crime fraud
11 exception of the privilege rule. So, I'll
sustain the
12 objection of the defendant as to this
conversation.
13 MR. ADELMAN: Very well.
14 (The jury was returned to the
courtroom and the
15 following proceedings were conducted in open

court:)

16 THE COURT: Mr. Adelman, if you will
continue.

17 MR. ADELMAN: Thank you, your Honor.
18 Your Honor, ladies and gentlemen.

19 Q. Doctor, can you tell us what the NOD
project was

20 there at Philip Morris?

21 A. The NOD stands for naturally occurring
22 denitrofication. And it was one of three

projects where
23 the intent was to reduce nitrate in tobacco

because the
24 nitrate produces oxides of nitrogen, which then
interact

25 with alkaloids like nicotine, which work to form

1943

1 nitrosamine, which are one of the most
carcinogenic forms
2 of smoke.

3 THE COURT: Could you pull your
microphone a

4 little closer.

5 Q. All right. Was that project conducted in
your

6 division?

7 A. The naturally occurring denitrofication
was conducted

8 in my division. There were two other projects
9 electrodialysis project was conducted in Dr.

Gannon's

10 division. And there was one in Europe called

NINO,

11 N-I-N-O, but they were all methods referring to
removing

12 nitrates from tobacco.

13 Q. Referring to project NOD, was that project
completed?

14 A. In my opinion it was completed twice. The
first time

15 was in approximately 1980. Patent was applied
for in 1979,

16 and then work continued past that point. And
then another

17 patent was applied for I think in the '83, '84
time frame.

18 Q. What were you told about by the
management, Mr.

19 Seligman and Mr. Hauserman and so forth about
project NOD

20 and it's future?

21 A. Well, basically the issue came up in the
1980 time

22 frame about whether the costs of doing this.

So, we had an

23 independent study done by a person in the
administrative

24 area with an engineering background in order to
determine

25 the costs of the three different processes for
removing

1944

1 nitrate.
2 I was told by Dr. Osdene that was
one of the
3 instances where he showed me data from Europe
which tended
4 to indicate that the project was successful.
This was
5 being applied for reconstituted tobacco, the
reconstituted
6 leaf, where they were already removing 90
percent of the
7 nitrate.
8 But 90 percent wasn't good enough to
prevent
9 significant mutagenicity in testing. So, the
object was
10 to remove 99 point 99 percent of the nitrate.
11 It appeared that it worked, that is,
it removed
12 the nitrate. It appeared you put the material
made from
13 this process in cigarettes, you could smoke
them and they
14 were acceptable to panels, and it appeared that
the cost
15 was eminently affordable.
16 Q. Well, you were told that it was too
costly, right?
17 A. Yes, but the report tends to indicate that
it was not
18 too costly.
19 Q. Whose report are you referring to?
20 A. The report was done by Susan Dobberstein.
21 Q. And may I have 2228, please. Is this the
cover page
22 there of the Dobberstein report?
23 A. Yes.
24 Q. And moving on, sir, to page two, there are
25 highlighted portions there. This generally
describes the

1945

1 research?
2 A. Yes, it does. First part says that it
reduces NOS
3 deliveries. NOD was better than the other two
anaerobic or
4 electro dialysis process.
5 And it also, second part there, that
you have
6 lower total particulate matter VOCO, that's
carbon
7 monoxide; CN hydrogen cyanite; and alkaloid
thanethercal,
8 which is what they were currently using or
second
9 generation RL.
10 Q. Are there references further in the report
to the
11 cost issue?
12 A. Yes.
13 Q. Could we have those, please?

14 A. The next one shows you the internal
smoking panels
15 found no differences between the control and
test
16 cigarettes at 19 percent RL levels. So, you
could put
17 quite a bit of this stuff into a cigarette and
still not
18 alter the taste.
19 Q. Here we have a page that talks about a
table
20 summarizing the capital investment required to
install
21 commercial scale process for line 3-B, and then
we'll move
22 ahead.
23 Here is a table talking about
summary of
24 capital costs and so forth. Without going
through all the
25 details, did this establish a cost that was
reasonable

1946
1 from your perspective?
2 A. From our perspective, the cost ranges from
48 million
3 to 65 million dollars, which is much less than a
penny a
4 pack, about a penny a pack. So, in terms of the
cost of
5 implementing this seemed reasonable.
Nevertheless, we were
6 asked to develop the process further.
7 Q. All right. Who said that the costs were
excessive?
8 A. Well, that's Dr. Seligman, Mr. Resnik, and
a quite a
9 few people that was sort of the decision that
came from New
10 York City, from the headquarters.
11 Q. My question is, and perhaps I've asked a
bad
12 question, did the project continue, was it
funded again or
13 did it stop?
14 A. It continued.
15 Q. Did it ever end?
16 A. I think it did end after we produced the
second
17 process, which I think resulted in the '83, '84
patent
18 application, it was terminated some time in the
mid-80s. I
19 don't remember the exact time.
20 Q. Do you remember who terminated it?
21 A. No, I don't.
22 Q. Do you know why it was terminated?
23 A. It was terminated because of the cost of
doing this.
24 Q. Do you agree now that the cost of doing it
was
25 excessive?

1947

1 A. I didn't agree at the time and don't agree
now.

2 Q. For the reasons you have stated?

3 A. Yes, it seems in terms of other processes
that were

4 implemented very quickly, for example, like
laser

5 perforation where we put lots of holes in paper,
saved 30

6 million up to 60 million dollars a year.

7 That was implemented in 10 to 11
months after

8 we discovered it. This one went on through
virtually my

9 whole career that I was there.

10 Q. What did you conclude about that
stretching it out?

11 A. My conclusion was it was a lot easier to
get a

12 project through that saved money than one that
reduced the

13 safety of the cigarette.

14 Q. Did you ever hear the phrase paralysis by
analysis?

15 A. Yes, I did.

16 Q. In what context?

17 A. It was a favorite saying of Mr. Cliff
Goldsmith who

18 was the President of Philip Morris, Inc. during
the portion

19 of the time that I was there. And he was always
chastising

20 us on some projects for taking too long by
analyzing it to

21 death. And I kind of used that phrase in
response to my

22 management with discussing this, because it
seemed like

23 rather than implement it, especially whether you
have an

24 indication as good as this, that we would
continue to

25 analyze it and avoid the issue of spending the
money to do

1948

1 it.

2 Q. Is this example that you are talking about
NOD

3 project that you were talking about, analysis
paralysis by

4 analysis in your view?

5 A. Yes, in my view.

6 Q. With respect to Mr. Dunn, I wonder if we
could put up

7 Exhibit 1054. In your book it is 850. Counsel,
it is 850

8 as well as 1054.

9 Now, this is a document --

10 MR. LOMBARDI: Your Honor, excuse
me. This is

11 a document that precedes the witness's time
with the
12 company.
13 MR. ADELMAN: That's exactly right,
and I want
14 to get to one point and ask him about it.
Counsel is
15 correct.
16 If you will, this is a document, I
think,
17 authored in 1972. There is a highlighted
portion further
18 on I'm going to ask you about.
19 Actually, on the next page of this,
yes, here
20 we are, this is page 5 of the highlighted
portion. If you
21 will, sir, says: "A cigarette should be
conceived not as
22 a product but as a package. The product is
nicotine. The
23 cigarette is but one of many package layers."
And then
24 moving on, "Think of a cigarette pack as a
storage
25 container for a day's supply of nicotine.
Think of the

1949
1 cigarette as a dispenser for a dose unit of
nicotine."
2 Now, recognizing that this was
written and
3 created by Mr. Dunn in 1972, the question is
this; did he
4 ever say these things to you?
5 A. Yes, this is well known to be Dr. Dunn's
view views
6 on nicotine, being the reason and the only
reason why,
7 well, you can reinforce nicotine, but being the
main reason
8 for people smoking going back to, we discussed
while I was
9 there the issue that in the 50's people had
tried to sell a
10 cigarette without nicotine in it.
11 It was called Sano, and a kings Sano
version.
12 Both of those were denicotined cigarettes, and
they did
13 not sell. And this is a discussion that we had
many
14 times, that nicotine is why people smoke.
15 Q. And Mr. Dunn said these things that appear
in this
16 exhibit?
17 A. Yes.
18 Q. Thank you.
19 Exhibit 2183, please, if you will.
Exhibit
20 2183, it's a memo from Mr. Osdene August 12,
1980, talking

moving 21 about evaluation of major R and D programs, and
see that? 22 down to the bottom, nicotine program; do you

23 A. Yes, and I received a copy of this memo.
24 Q. All right. The memo you received says
"This program 25 includes both behavioral effects as well as
chemical

1950
is that I 1 investigation. My reason for this high priority

2 believe the thing we sell most is nicotine."
3 Did you discuss that particular

point, the 4 thing we sell most is nicotine, with Dr.

Osdene?

5 A. Yes.
6 Q. Did he say that to you?
7 A. Yes, and as I say, no one there while I

was there 8 indicated that anything different when they said
nicotine 9 is what we are selling, and we manipulated

nicotine in the 10 product to make sure that we maintained it.

11 Nicotine is what cigarettes is all
about,

12 nicotine and the effects of nicotine in
combination with

13 the other ingredients.

14 Q. So, what you are saying now this same some
point was

15 encoded in the other statements of other people
who worked

16 there?

17 A. Yes.

18 Q. Did anybody say anything to the contrary?

19 A. No, not that I can recall.

20 Q. Now, moving on, sir, regarding your
colleagues at the

21 research center down there in Richmond, for the
time that

22 you were there, was there any discussion as to
whether

23 nicotine was a drug?

24 A. Yes.

25 Q. What was the view?

1951
pharmacological 1 A. Well, the drug is something which has
nicotine 2 physiological effects. Alkaloids are drugs, and

3 is an alkaloid. And it's a drug. And the view
was that we

4 studied these materials, in the same manner that
drug

5 companies study their products. So, it's a
drug.

6 Q. Well, I just want to be sure you are
telling us what

7 the position or statements were of the staff
people there
8 and the management. Is that what you have done?
9 A. Yes, that's what I've done. We have had
testing in
10 rats, we had testing outside. We had structure
activity
11 analysis. We synthesized analogs. We
recognized it was a
12 drug. And we developed alternatives to the drug
called
13 nicotine analogs.
14 And we discovered and developed ways
of better
15 understanding how the drug worked through Dr.
DeNoble's
16 work. So, it's a drug.
17 Q. All right. What was the view of the
staff,
18 management there as to whether nicotine was an
addictive
19 drug?
20 A. I indicated earlier there were a lot of
discussion
21 about people formulating reasons why it
shouldn't be called
22 that, but no evidence was ever proposed or
stated that
23 was -- that stated bluntly, okay, on the basis
of this we
24 can refute the hypothesis that nicotine is an
addictive
25 drug.

1952

1 Q. Can we have Exhibit 1858, please.
2 This exhibit was copied to you from
Dr.
3 Gullotta, do you know who he is?
4 A. Yes.
5 Q. Who's he?
6 A. Dr. Frank Gullotta did work on
electroencephalograph
7 studies of smoking, that is, brain wave patterns
that are
8 generated when people smoke.
9 By the way, when I received this
document,
10 there was never any document that I received
that had
11 attorney work products on it, so.
12 Q. Moving ahead to the contents of the
document here,
13 can you summarize what this finding is and what
14 significance?
15 A. Basically it's, what you are trying to do
is
16 determine dose response. All drugs have a dose
response.
17 The more you give people penicillin for folks,
you need to
18 know how much, or aspirin, you need to know how
much to

19 give before it is effective. This is a dose
response study

20 on nicotine.

21 Q. All right. Let me put up Exhibit 3772,
please. Let

22 me ask you just these questions.

23 3772 is --

24 MR. LOMBARDI: Objection, your
Honor. This is

25 plainly outside the time period that the
witness was

1953

1 employed by Philip Morris. And it looks to be
a newspaper

2 article or a Cable News Network report on
certain hearings

3 before the House, which would be hearsay.

4 MR. ADELMAN: On that level, it
comes in as an

5 admission to the court, please. We concede
this is a 1994

6 document. We simply want to ask the witness
about it.

7 THE COURT: That's, I don't think,
beyond his

8 time there. So, it may be admissible for on
other

9 grounds, but I don't know what the purpose
would be of

10 asking this witness when he left the company
that many

11 years prior.

12 MR. ADELMAN: All right. We'll
proceed.

13 Q. All right, Sir, let me turn to another
topic here.

14 And by way of doing that, let me ask you whether
you came

15 to know a person there at Philip Morris by the
name of

16 Myron Johnston?

17 A. Yes.

18 Q. Who was Myron Johnston?

19 A. Mr. Myron Johnston worked in the consumer
testing

20 area. He worked along with some of the
behavioral research

21 people. But his main area of expertise was in
analyzing

22 demographic profiles of smokers, that is, who
used

23 cigarettes and what they thought about using
them and

24 things of that sort.

25 Q. Those profiles made available you from
time to time?

1954

1 A. These were reports that were provided to
me,

2 discussions that took place at meetings that we
had,

3 including Mr. Johnston was one of the favorite
speakers for
4 our monthly Richmond meetings, where the senior
management
5 from New York, President of Philip Morris USA,
sometimes
6 the officers of Philip Morris Incorporated would
come down
7 to hear what we were doing at the Research and
Development
8 center.

9 And Mr. Johnston would frequently,
maybe once a
10 year, twice a year, give talks on demographics
of smokers.

11 Q. Did some of those talks, some of those
demographics
12 refer to smoking by children, by people under
18?

13 A. Yes, they did.

14 Q. All right. Now, what was Mr. Johnston's
reputation

15 in the company, as far as you knew?

16 A. He had a very good reputation. He had a
lot of more
17 contacts than the rest of us did with people in
marketing
18 in New York. And as I indicated, when the
marketing people
19 might be coming to Richmond or -- we provided
the agenda
20 the directors would talk to the vice president
about the
21 agenda for the upcoming Richmond meeting, they
have one
22 every month, the management would come down from
New York,
23 and there was always a great interest when Mr.
Johnston
24 gave his talks because he felt they were
important to
25 understanding who the users of the product were.

1955

2504. Now,
1 Q. Let me have displayed for you Exhibit
Myron Johnston
2 before you is Exhibit 2504, a memo from Mr.
3 to Mr. Jon Zoler.

4 What department did Mr. Zoler work
in?

5 A. He was in the marketing group in New York.

6 Q. To the marketing.

7 Now, moving farther on here, there
is on page
8 two, here parts which are highlighted having to
do as a
9 highlighted part, the people starting smoking
before age
10 18. Did you receive this memo while you were
at Philip

11 Morris?

12 A. This is the continuation of, yeah, I've

seen this.

13 This is continuation of presentations that were
made as far
14 back as 1981 that were talked about. So, this
is like two

15 years later. This is about a two year sequence.

16 Q. All right. Let's talk just for a moment
or have the
17 court understand these presentations were the
occasions

18 when Mr. Johnston would speak to people from
Richmond and

19 also from New York?

20 A. That's correct.

21 Q. And you attended them?

22 A. Yes, as a director, I attended the so
called Richmond

23 meetings where the senior management from New
York came.

24 Q. During these Richmond meetings Mr.
Johnston would

25 speak, was the matter discussed or displayed
about research

1956

1 or information about people under 18 and their
smoking
2 habits?

3 A. Yes, it was.

4 Q. Is this an example of such a display?

5 A. Yes, and there is much more I believe, but
yes.

6 Q. Did anybody stand up during these meetings
and say,
7 hey, don't do that? We don't want that
information?

8 A. No, they did not.

9 Q. What was the level of senior management
that were

10 there for these presentations if you recall?

11 A. You mean, senior management usually at
these meetings

12 would include President of Philip Morris USA,
and some

13 senior official from Philip Morris,
Incorporated, and for

14 these meetings usually the Vice President of
Marketing.

15 Q. Can you give us some names?

16 A. Vice President of Marketing, 1981 time
frame was

17 James Morgan. The 1983 time frame was Bill
Campbell. The

18 President of Philip Morris USA was Shep Pollock
at that

19 time, the senior Vice President Wally McDowell.

20 Vice President of operations who came down from
New York

21 and frequently either Mr. Goldsmith, Hugh
Cullman, who was

22 the CEO of Philip Morris USA.

23 Q. So, we can be sure and be fair you are not

clear that
one of
pinpoint one

24 any one of these individuals were present at any
25 these meetings as an individual. You can't

1957

1 meeting, one individual?
2 A. That's right; I can't.
3 Q. You know generally management level was
there?
4 A. Yes.
5 Q. Were there discussions by Mr. Johnston or
anyone else
6 about patterns of smoking of people under 18?
7 A. Yes, there were.
8 Q. Can you tell us about those?
9 A. Well, they would be the basic conclusion
which you'll
10 find in many memos, was that Marlboro brand was
sort of key
11 to the future of Philip Morris. And that brand
was the
12 brand of choice among young smokers, that is,
smokers
13 before the age of 18.
14 And the chart, for example, on that
you have up
15 there right now shows the median age at which
people began
16 to smoke, if they were not a high school
graduate, was 16.
17 And median means half the people who smoke
start smoking
18 before that age.
19 Q. Now, you are telling us what was said at
the meeting
20 by Mr. Johnston and others?
21 A. Yes.
22 Q. Did anybody at any of these meetings when
teen
23 smoking was discussed stand up and say, stop it;
we don't
24 want to hear it?
25 A. No.

1958

2279 from
page?
that, that's
to
report.

1 Q. Exhibit 2279, please. Do you recognize
2 this front page?
3 A. Not from the front page.
4 Q. All right. How about the inside cover
5 A. Yes.
6 Q. All right. Did you receive a copy of
7 dated March 31, 1981?
8 A. Yes, and I was referring a little earlier
9 precursor to the '83 memo, and this is the
10 Q. Again, it is authored by Mr. Johnston?
11 A. Yes.

12 Q. And moving into the document itself, which
is
13 entitled Young Smokers Prevalence, Trends, and
Implications
14 and Related Demographic Trends, let's look
further on.
15 It states, "It is important to know
as much as
16 possible about teenage smoking patterns and
attitudes.
17 Today's teenager is tomorrow's potential
regular customer,
18 and the overwhelming majority of the smokers
first begin
19 to smoke while still in their teens. Smoking
patterns of
20 teenagers are particularly important to Philip
Morris."
21 Was that subject discussed verbally by the
people at the
22 meeting?
23 A. Yes, it was.
24 Q. By Mr. Johnston?
25 A. Yes.

1959
1 Q. And by other people there?
2 A. Yes.
3 Q. "Furthermore, it is during the teenage
years that the
4 initial brand choice is made. At least part of
the success
5 of Marlboro Red during its rapid growth period
was because
6 it became the brand of choice among teenagers
who then
7 stuck with it as they grew older -- this
combined with the
8 rapid growth in the absolute number of
teenagers."
9 Again, was that something Mr.
Johnston said at
10 the meetings?
11 A. Yes, this was a very key meeting which the
tables
12 were going to be set up.
13 Q. You were at the meeting?
14 A. Yes, I was.
15 Q. You recall this particular being
discussed?
16 A. Yes I do.
17 Q. The tables that you referred to, let's
look at those,
18 please.
19 Here under the heading teenage
smoking
20 prevalence, of the tables. Right down
breakdown smoking
21 all the way down to age 12; is that correct?
22 A. Yes.
23 Q. Were these tables discussed at the
meeting?
24 A. I specifically remember table two. I

don't

25 specifically remember table one.

1960

who were

1 Q. That's percentages of 15 to 18 year olds

2 regular smokers.

3 BY MR. ADELMAN:

with this

4 Q. May I have Exhibit 2123. Are you familiar

5 exhibit?

6 A. Yes.

you were

7 Q. Okay. Did you receive a copy of it while

8 there?

with part

9 A. Yes, I was involved in helping Dr. Seeman

the time,

10 of his studies on who worked for Dr. Sanders at

11 the studies on nicotine analogs.

about

12 Q. It would help everybody. You were talking

13 analogs, right?

14 A. Yes.

15 Q. Were analogs used or experimented with?

nicotine has two

16 A. Yes, the ideas, it indicates there

17 effects. One is on the central nervous system.

The other

18 on the peripheral nervous system.

more to

19 The peripheral effects were related

20 increasing heart rate and things of that sort.

So, the

21 idea was to develop a chemical that would

behave like

22 nicotine, but would not have the effect on your

heart rate

23 and on your blood vessels as a constriction.

24 Q. Was that completed?

there was

25 A. Many such candidates were developed, and

1961

cigarette.

1 also a project to develop an analog menthol

Company,

2 product was purchased from the Wilkinson Sword

and used

3 that was a menthol and analog that was completed

4 in a product.

understand,

5 The nicotine materials, as far as I

directly used in

6 were not, at the time I was there anyway,

7 a product.

8 Q. Were they used in any other way?

analog

9 A. Well, it's interesting that a lot of these

they are

10 are, there is a chemical called pyridine and

11 pyridine derivatives, and pyridine compounds are

also known

12 as flavorants.
13 And it was recognized by Dr. Seeman
and Dr.
14 Sanders that a lot of the compounds that, for
example,
15 occur when you react sugar and amino acids and
protein in
16 sugars, would have the same structures as the
compounds
17 that serve as nicotine analogs.
18 So, a significant amount of effort
was applied
19 toward developing flavor products that had the
same
20 chemicals in them. So that the flavor, the
flavor
21 compound would in essence behave as a nicotine
analog.
22 Q. Finally, sir, were additives used by
Philip Morris at
23 the time you were there?
24 A. I didn't.
25 Q. Were additives used?

1962

1 A. Yes.
2 Q. Were they tested to your knowledge?
3 A. Not separately.
4 Q. Should they have been?
5 A. In my opinion, yes.
6 Q. And why is that?
7 A. Again, I believe that you need to know
whether the
8 additive in and of itself creates a significant
risk to the
9 consumer, then you can determine whether you
want to put it
10 in your product.
11 If you make some other change in the
product
12 that has an untested additive in it which
otherwise might
13 have decreased the mutagenicity of that
product, you might
14 not tell if the additive was causing a bad
affect.
15 Q. Did you make that concern of yourself made
known to
16 anybody there?
17 A. Yes.
18 Q. What were you told?
19 A. That it was being tested.
20 Q. Was that true?
21 A. I don't know.
22 MR. ADELMAN: That's all I have,
your Honor.
23 THE COURT: Cross examination.
24 CROSS EXAMINATION
25 BY MR. LOMBARDI:

1963

1 Q. Doctor, and good afternoon, ladies and
gentlemen of

2 the jury. For the record, George Lombardi on
 behalf of
 3 Philip Morris.
 4 Dr. Farone, biological activity is a
 code word?
 5 A. Yes.
 6 Q. Code word used by Philip Morris?
 7 A. Yes.
 8 Q. And, as far as you know, that code word
 was used
 9 because Philip Morris didn't want to use other
 words; is
 10 that right?
 11 A. Because in print mutagenicity,
 teratogenicity,
 12 carcinogenicity, it didn't look quite as good.
 13 Q. Are you aware of any other people or
 organizations
 14 that you use the same code word biological
 activity?
 15 A. Well, you could use it in other respects,
 I know
 16 folks you can say --
 17 Q. Can you answer my question, sir? I asked
 you if you
 18 know of any other organizations that use that
 term?
 19 A. Yes, I do.
 20 Q. Would the Surgeon General of the United
 States be an
 21 organization that uses the code word biological
 activity?
 22 A. I mean, Surgeon General could use it, the
 FDA could
 23 use it, almost anybody could use it.
 24 Q. Do you, did you know, does the Surgeon
 General of the
 25 United States use biological activity which you
 have
 1964
 1 described in this courtroom as a code word used
 solely by
 2 the tobacco industry?
 3 A. I didn't say it was used solely by the
 tobacco
 4 industry, did I?
 5 Q. Are you aware, do you know as you sit here
 today,
 6 whether the Surgeon General of the United States
 uses the
 7 term biological activity, the code word that you
 just
 8 described as being used, company word you just
 described as
 9 being used at Philip Morris?
 10 A. No, I do not.
 11 Q. I have here the 1979 Surgeon General's
 report, sir,
 12 that was while you were at Philip Morris; is
 that right?
 13 A. That's true.
 14 Q. See this chart at page 14-114 of the 1979

Surgeon

15 Generals report?

16 A. Yes I do.

17 Q. Makes reference to biological activity?

18 A. Yes.

19 Q. Thank you.

20 Have you looked at the 1981 Surgeon

General's

21 report, sir?

22 A. I did.

23 Q. Did you note they used the term biological
activity

24 there too?

25 A. I don't recall it right now, but I'm not
surprised if

1965

1 they did.

2 Q. Let me show you page 25 of that report.

Do you see

3 that there?

4 A. Yes, I do.

5 Q. Does that refresh your recollection that
the Surgeon

6 General uses what you described as a code word
biological

7 activity?

8 A. Yes.

9 Q. Now, do you recall testifying that Philip
Morris was

10 reluctant to use the term addiction in-house; do
you recall

11 that?

12 A. Yes.

13 Q. Are you aware of any other organizations
during the

14 time that you were at Philip Morris that were
reluctant to

15 use the term addiction?

16 A. Yes. Some of the reports which showed
dependence

17 would use the word dependence rather than the
word

18 addiction. They would use, I believe, the 1980
APA report

19 uses the term dependence in place of addiction.

20 Q. The APA, so the jury knows, is the
American

21 Psychiatric or Psychiatrist Association; is that
right?

22 A. That's right.

23 Q. And they published something called the
Diagnostic

24 and Statistical Manual of mental disorders; is
that right?

25 A. Yes.

1966

1 Q. And let me just show you this. It's the
cover and

2 I'll move in.

3 Do you know that the third edition
of the

4 Diagnostic and Statistical Manual of Mental
Disorders was
5 published in 1980?
6 A. Yes; yes, I do.
7 Q. Let me just show you that. Do you see
that?
8 A. Yes.
9 Q. Sir, you are aware, are you not, that the
word
10 addiction is not even in the index of the
American
11 Psychiatric Association's Diagnostic and
Statistical Manual
12 of Mental Disorders?
13 A. I am.
14 Q. And you are aware that the word addiction
is not even
15 in the glossary of this volume. Diagnostic and
Statistical
16 Manual of Mental Disorders. You are aware of
that, aren't
17 you?
18 A. That's right.
19 Q. Are they afraid of the word addiction too,
sir?
20 A. Yes.
21 Q. Sir, let's go back to when you first
started at
22 Philip Morris -- 1976 to '84 was your time frame
at Philip
23 Morris; is that right?
24 A. That is right.
25 Q. When you first started off I think you
said you had

1967
1 position of assistant or associate principal
scientist; do
2 I have that close?
3 A. That's correct.
4 Q. And then you moved to Director of Applied
Research;
5 is that right?
6 A. That's right.
7 Q. And held that job from 1977 to 1984?
8 A. Yes.
9 Q. Okay. Now, from 1977 to 1984 there were
other, there
10 were other directorates in the R and D
department; is that
11 right?
12 A. That is correct.
13 Q. There was a directorate called process
development?
14 A. Not in the beginning, but later, yes;
there was.
15 Q. And directorate called product
development?
16 A. Yes.
17 Q. A directorate called administrative
services?
18 A. That's correct.
19 Q. And you said there was a directorate that

changed
point and
point, yes.
the overall
Morris?

20 names over time and was known as research at one
21 biological chemical research at one point?
22 A. And some extramural studies in it at some
23 Q. And all of these directorates were over
24 aegis of the R and D Department at Philip
25 A. Correct.

1968
R and D,
Vice President
much of
directorates other
the
Victor Denoble,
research,
him, Dr.

1 Q. And they reported to the Vice President of
2 you and your other directors reported to the
3 of R and D at Philip Morris; is that right?
4 A. That is correct.
5 Q. Now, sir, in fairness, isn't it true that
6 what you testified to today happened in
7 than your own?
8 MR. ADELMAN: Object to the form of
9 question as vague, your Honor.
10 THE WITNESS: I'm not sure, I mean.
11 Q. Well, for instance, for instance, Dr.
12 you made reference to him?
13 A. Yes.
14 Q. You were not his supervisor, were you?
15 A. That is correct.
16 Q. You made reference to Myron Johnston?
17 A. That is correct.
18 Q. You were not his supervisor, were you?
19 A. That is correct.
20 Q. You made reference to biological research?
21 A. Correct.
22 Q. You were not responsible for biological
23 were you?
24 A. That is correct.
25 Q. You made reference to, I think you called

1969
to go with
or doctor?
were you?
your

1 Dunn sometimes and Mr. Dunn, or counsel, I want
2 what you are comfortable with. What is it, Mr.
3 A. Doctor.
4 Q. Dr. Dunn, you were not his supervisor,
5 A. I was not.
6 Q. You were not responsible for INBIFO?
7 A. That is correct.
8 Q. Research on acetaldehyde was not done in
9 department?
10 A. That's correct.
11 Q. Work concerning the, as you put it,

maintenance of
12 the controversy was not done in your department?
13 A. That is correct.
14 Q. Work concerning whole product testing was
not done in
15 your department?
16 A. Was it done?
17 Q. I said work concerning whole product
testing was not
18 done in your department, was it?
19 A. No; we didn't do any.
20 Q. Work concerning nicotine analogs was not
done in your
21 department, was it?
22 A. Toward the end it was, yes. Dr. Seeman of
the
23 organic chemical people, I think, in 1983 to '84
were
24 transferred into my department.
25 Q. Carolyn Levy's work was not part of your

1970
1 responsibility in applied research?
2 A. That is correct.
3 Q. Frank Gullotta's work was not your work in
applied
4 research?
5 A. Correct.
6 Q. What you were responsible for, sir, in
large part was
7 the development of a safer cigarette; is that
right?
8 A. About 80 percent of my time, I think, yes.
9 Q. Your mission as the head of the direct,
the applied
10 research directorate was to find a safer
cigarette; is that
11 right?
12 A. That was one of the main missions, yes.
13 Q. To work to develop a safer cigarette?
14 A. Yes.
15 Q. And 20 percent of your time was spent on
16 acquisitions, but 80 percent of your time was
devoted to
17 that goal?
18 A. That's right.
19 Q. You were working to find ways to reduce
the risk of
20 smoking; is that right?
21 A. That is correct.
22 Q. And that was a worthwhile objective;
wasn't it?
23 A. It was, yes.
24 Q. And it was a worthwhile objective for
Philip Morris
25 to be pursuing, wasn't it?

1971
1 A. Yes.
2 Q. And they hired you and paid you money to
take that
3 position with the goal of helping to find a
safer

4 cigarette; isn't that right?
 5 A. That's correct.
 6 Q. Now, there were people who worked for you
 in applied
 7 research, correct?
 8 A. Yes.
 9 Q. About 200 or so by the time you got to the
 end?
 10 A. Yes.
 11 Q. Number varied over time, I'm sure; is that
 right?
 12 A. That's correct.
 13 Q. Now, of those people, those people spent
 even more
 14 than 80 percent of their time trying to develop
 a safer
 15 cigarette; isn't that right?
 16 A. Yes, they did.
 17 Q. Some of those people spent a hundred
 percent of their
 18 time trying to develop a safer cigarette?
 19 A. Correct.
 20 Q. And Philip Morris hired those people and
 paid those
 21 people money to come to Philip Morris and work
 on the
 22 development of a safer cigarette; is that
 correct?
 23 A. That is correct.
 24 Q. The people working in other directorates
 within the R
 25 and D Department, those people in the other
 directorates,
 1972
 1 they were also working on safer cigarettes to
 some extent
 2 or another, isn't that right?
 3 A. Well, I think that's true in Dr. Osdene's
 4 directorate, but I'm not sure of the maybe a
 little
 5 about it in the processing area.
 6 Q. Okay. You were proud of the work you did
 at Philip
 7 Morris; is that correct?
 8 A. Yes, I was and I am.
 9 Q. You were proud of the work that you and
 your
 10 colleagues did; is that correct?
 11 A. That's correct.
 12 Q. You believed that the work you were doing
 was in the
 13 best interests of Philip Morris' customers?
 14 A. Yes, I do.
 15 Q. You believe that the work that you were
 doing served
 16 the interest of the medical and scientific
 communities?
 17 A. It was a step in the right direction.
 18 Q. You believed that the work you were doing
 to try to
 19 reduce the hazards of smoking served the public
 health?

20 A. Yes.
21 Q. Now, sir, you did not leave Philip Morris
because you
22 were some unhappy with what the company was
doing, that you
23 quit in disgust; is that right?
24 A. That is correct.
25 Q. You were fired?

1973
1 A. Correct.
2 Q. Let's talk about that for a minute.
3 And as I understand your testimony,
in December
4 of 1983, you were told that you were going to
be promoted;
5 is that right?
6 A. I don't remember the exact time, something
around
7 that time.
8 Q. And we'll say the end of 1983?
9 A. Yes.
10 Q. And your promotion was going to be to the
position of
11 Vice President of Research and Development; is
that
12 correct?
13 A. That is correct.
14 Q. And the Vice President of Research and
Development is
15 the number one person at Philip Morris on the R
and D side;
16 is that correct?
17 A. Well, within Philip Morris USA, that's
correct. I'm
18 not sure about Philip Morris Incorporated
overall.
19 Q. I'll take Philip Morris USA then?
20 A. Okay.
21 Q. It's the number one person in Philip
Morris USA for
22 purposes of R and D; is that correct?
23 A. That is correct.
24 Q. And when you were told that you were going
to be
25 promoted to Vice President of R and D, I take it
you were

1974
1 excited about that?
2 A. If you recall my testimony, I was
concerned such an
3 announcement would be made without the actual
promotion
4 because I was concerned that many things could
change
5 between the time of the announcement. But, yes,
in general
6 I felt that that would be a recognition that the
way we
7 were operating the things we wanted to do would
continue
8 sort of unabated and maybe actually improve.

9 Q. Are you saying that you are the only
reason you were
10 excited about going to Vice President is because
certain
11 programs would continue?
12 A. One of the main reasons for being excited
is because
13 when you spend that much time doing work, you
want to see
14 the work go all the way, end up in products, end
up in
15 fruition.
16 So, that's part of the excitement.
That is a
17 significant fact in a scientist's life is
working on
18 material that is good. We just talked about
how I was
19 very proud of the work that we were doing. I
was proud of
20 the, work that the people working for me did.
And if we
21 could in fact get those things into products,
that's a
22 step above just doing it.
23 So, in other words, I would have
more influence
24 over putting these things in products.
25 Q. Sir, weren't you happy for yourself,
weren't you

1975
1 proud that you had been asked to become the Vice
President
2 or indicated that you would probably be asked to
become the
3 Vice President of Research and Development?
4 A. Of course.
5 Q. It meant prestige, didn't it?
6 A. Well, yes, I suppose within that local
community, I'm
7 not so sure that, you know, being, doing
research in Philip
8 Morris is not necessarily a prestigious
position.
9 Q. Being Vice President of Research and
Development is
10 more prestigious than being a bench scientist?
11 A. Yes.
12 Q. You were in charge of 600 people or so?
13 A. Yes, would have been.
14 Q. Did it also, mean, sir, that you would be
paid more?
15 A. Probably. I mean, that's one expectation
you have.
16 No one talked about increase in salary. That
was never
17 even mentioned.
18 Q. And in fact, sir, not long after you heard
from
19 Mr. Hausermann that you might be the Vice
President of R
20 and D, you and your wife bought a house in

Richmond, a

21 bigger house in Richmond, didn't you?

22 A. No, my wife did.

23 Q. Well, were you going to live with her?

24 A. Yes, but we have a --

25 THE COURT: That's the way it
usually happens.

1976

1 THE WITNESS: It's very important
point. We

2 have a prenuptial agreement where she has to
own the home.

3 I can't. So, it was her house; it was her
salary that was

4 on the line for buying the house. All I could
be was a

5 co-signer on the note to the house.

6 Q. I'm not going to ask you about the
prenuptial

7 agreement. But you and your wife bought a, or
your wife

8 bought a bigger house in Richmond; is that
right?

9 A. Correct.

10 Q. Now, at some point you learned that plans
had changed

11 at Philip Morris and you were no longer going to
be

12 promoted to Vice President of R and D; is that
right?

13 A. Yeah, after my wife had filed an EEOC
complaint.

14 Q. I want to cover that. Let's go back to
that, because

15 some time around the time when you got your
promotion your

16 wife or you were told about your possible
promotion, your

17 wife was told about a possible promotion as
well; is that

18 right?

19 A. That's correct.

20 Q. And your wife didn't get the promotion; is
that

21 right?

22 A. That is correct.

23 Q. And she filed what's called an EEOC
complaint against

24 Philip Morris; is that right?

25 A. That's correct.

1977

1 Q. Now, your wife had been at Philip Morris
for a number

2 of years; is that right?

3 A. 19 years.

4 Q. And she worked in the stemmery I think you
said?

5 A. Well, she was assistant manager at the
time of the

6 green leaf stemmer, yes.

7 Q. Okay. Now, some time after your wife

filed the EEOC

8 complaint you found out that you weren't getting
a
9 promotion; is that right?
10 A. That's correct.
11 Q. And you thought that you weren't getting
that
12 promotion because of your wife's claim; is that
right?
13 A. Yes.
14 Q. Okay. And so what you did at that point,
after
15 having various discussions with Mr. Hauserman is
you
16 retained an attorney; is that right?
17 A. Yes, I sought an attorney's advice based
on Dr.
18 Hauserman's advice to do so, yes.
19 Q. So, you are saying that Dr. Hauserman told
you to
20 seek an attorney so that you could look into
whatever
21 actions you might have against Dr. Hauserman and
Philip
22 Morris?
23 A. Well, not against Dr. Hauserman but
against Philip
24 Morris, yes.
25 Q. And then you wrote a letter to Philip
Morris, didn't

1978

1 you?
2 A. I wrote a letter to Dr. Hauserman,
personal and
3 confidential letter to Dr. Hauserman, because he
was on
4 vacation or just leaving for vacation.
5 Q. Okay. Let me show you the letter. It's
exhibit IWP
6 8929. I'm sure you can't read that, sir. So,
I'll come in
7 closer. Are you able to see that?
8 A. Oh, yes.
9 Q. I'll read it out loud just in case there
is some
10 difficulty. To M. Hausermann. This is to
advise you that
11 on June 25th, 1984 I retained an attorney for
the purpose
12 of taking whatever legal actions are necessary
to protect
13 my career from what I perceive as discriminatory
treatment.
14 As we discussed, I believe that
promises made
15 to me by senior management were not kept and
that the
16 major reason for this was my wife's complaint
against the
17 company.
18 And you go on in the rest of the
paragraph to

19 talk about the importance of hand shake
agreements and
20 things like that to Philip Morris; is that
right?
21 A. That's right.
22 Q. And in the next paragraph you say, I have
instructed
23 my attorney to prepare to file a complaint, but
not to file
24 it pending your return from vacation, and your
advice on
25 how to proceed, i.e., your determination with
senior

1979
mutually
1 management on our ability to negotiate a
2 satisfactory solution.
3 You said that, right?
4 A. I did.
5 Q. Okay. Now, so you would agree with me,
you would
6 agree with me that you had now sent a letter to
Philip
7 Morris indicating that you were considering
filing an
8 action against the company; is that right?
9 A. Well, I -- yes, I mean Dr. Hauserman is
part of
10 Philip Morris. So therefore, it implies P and
B, implies
11 C, so, I guess.
12 Q. Is that scientific reasoning?
13 A. No, I think it's legal reasoning. But the
point here
14 is that I asked several times during the six
months prior
15 to this whether or not they wished to retain my
services.
16 Virginia is an at will work state.
17 I would have been willing to leave
at any time
18 if somebody had said, go ahead and leave. But,
you know,
19 or we don't need you anymore, or we don't want
you
20 anymore. So, this is a very strange -- it's
almost like
21 we never talked about it because of my wife's
complaint.
22 So, the only way according to Dr.
Hausermann,
23 the only way I could force an issue about the
resolution
24 of my job in light of my wife's complaint was
to seek
25 outside assistance. There was no medium within
the

1980

1 company to do that.
2 Q. Are you finished?
3 A. Yes.

4 Q. Okay. So, you told Philip Morris that you
were
5 instructing an attorney to prepare to file a
complaint but
6 not to file it at this time, correct?
7 A. Correct.
8 Q. Now, I think you testified on direct
examination that
9 you had no idea who you might have been
insubordinate to;
10 is that right?
11 A. That's right.
12 Q. Did it occur to you that sending a letter
where you
13 threaten legal action against your company might
be
14 considered insubordinate by Philip Morris?
15 A. No, it did not because it was suggested by
my
16 superior that I go seek the attorney and do
that. I mean,
17 if Max had not suggested it, then I could
understand
18 somebody coming in cold and saying, but I had
asked his
19 superior, Mr. Regston previously, whether or not
everything
20 was still okay.
21 This was before they told me I
wasn't going to
22 get the job. And he had said yes. So, this
whole issue
23 of not getting the job was not explained to me
at all.
24 And the only conclusion one can draw is that my
wife's
25 complaint was the cause of my dismissal.

1981
1 Q. Are you finished?
2 A. No, no one wanted to talk to me about
that.
3 THE COURT: Let me ask the attorneys
to
4 approach once.
5 (The following discussion was
conducted at the
6 side bar between court and counsel, out of the
hearing of
7 the jurors, as follows:)
8 THE COURT: We are not going to try
his
9 dismissal case, because he had something to do
with
10 tobacco formulation.
11 MR. LOMBARDI: I just have a couple
more
12 questions on this, without getting into the
issue of his
13 wife's thing or --
14 THE COURT: Because I'm afraid I
don't know
15 what happened on that, but I think -- actually

I think you
16 do your own client a disservice because you are
putting
17 before the jury an implication that he might
have been
18 dismissed because of his wife.
19 And we are not trying a Title VII
retaliation
20 claim here, and I don't just want to get bogged
down into
21 trying a different case.
22 Why don't you go on.
23 MR. LOMBARDI: I will, your Honor.
24 (The following proceedings were
conducted in
25 open court.)

1982
June 26, 1984?
1 Q. Now, the date on this letter, sir, was
2 A. That's correct.
3 Q. Now, is it about a week later that you
learned you
4 were being terminated; is that right?
5 A. July 6th, 1984.
6 Q. And you went to Barry Case's office; is
that right?
7 A. That's right.
8 Q. Barry Case is a management person at
Philip Morris in
9 Richmond; is that right?
10 A. He was 59 at the time, yes.
11 Q. And you went to his office, he told you
you were
12 being terminated; is that right?
13 A. Well, he read from a prepared script. Dr.
Hauserman
14 was there. He had been called back from
vacation, and Dr.
15 Hauserman was present during the entire
conversation.
16 Q. Okay. And as he was telling, as Mr. Case
was telling
17 you that you had been terminated, you were
visibly upset;
18 is that correct?
19 A. Well, I didn't see myself, but I've been
told I was
20 visibly upset. And my recollection was that I
was upset,
21 because there are nicer ways to terminate
somebody than to
22 call them at 11:00 o'clock in the morning on
Friday and
23 tell them that they are going to be escorted off
the
24 premises.
25 Q. And you said to Mr. Case you are making a
very big

1983
1 mistake; is that correct?
2 A. That's correct, because Mr. Case didn't

realize that
3 Dr. Hausermann instructed me or advised me to go
obtain an
4 attorney. So that was a mistake, I believe, on
the part of
5 the company, of not finding out what led to the
sequence of
6 events.
7 Q. And then in the middle of all of this, you
said to
8 Mr. Case, the die is cast; didn't you?
9 A. No, I didn't.
10 Q. Well, actually what you did was, you said
it, but you
11 said it in Latin, didn't you?
12 A. I said it to Dr. Hauserman because Dr.
Hauserman and
13 I -- Dr. Hauserman is Swiss. His first language
is French
14 and second is German, his third is English, and
he's a
15 Latin scholar. And we frequently trade Latin
things back
16 and forth.
17 And the phrase is "Alea Jacta est,"
which means
18 fate has decided this is the way I go; the die
is cast.
19 The Roman legions were famous for gambling.
They would
20 roll the dice and that's what Julius Caesar
said when he
21 decided he had to go across the Rubicon, the
die is cast.
22 Q. When he declared war on the Roman senate?
23 A. No, Dr. Hauserman understood. Barry Case
didn't
24 understand what I said, for one thing.
25 MR. LOMBARDI: Your Honor, I didn't
ask him

1984
1 what Barry Case understood or didn't
understand. I asked
2 him if that was what he said and whether he
declared war
3 on a Roman senate.
4 MR. ADELMAN: Your Honor, I object.
5 THE COURT: Does he have personal
knowledge of
6 that.
7 THE WITNESS: I think it was before
my time at
8 Philip Morris.
9 BY MR. LOMBARDI:
10 Q. In any event, sir, you and your wife left
Philip
11 Morris in the summer of 1984; is that correct?
12 A. That's correct. And before I left I think
it's
13 important to point out that I went with Dr.
Hausermann
14 back, and we had a meeting of all the people in

R and D,
15 all 400 of them.
16 And I sat in the back of the room
while he
17 explained to them my termination. There was no
ill will
18 about this whole unfortunate event.
19 Q. And sir, you would agree that you were at
least a
20 little bit angry about what happened at the end
of your
21 tenure at Philip Morris?
22 A. Well, I don't know. I'm not the type of
person that
23 becomes angry. I mean, it just, yes of course I
was upset,
24 I was concerned you don't have a job. But on
the way I
25 felt sorry for Max.

1985
1 He had a -- Dr. Hauserman was my
boss. I felt
2 sorry for the people I was working with. So,
maybe there
3 is anger or confusion, but not any worse than
any other
4 thing that comes along in life.
5 Q. At a minimum, Philip Morris was not a
favorite
6 company in your household after the summer of
1984; was it,
7 sir?
8 A. Not true. We still derive our pension
from Philip
9 Morris, and even recently my company loaned
Philip Morris
10 \$40,000, part of a short term note. I mean, I
don't bear
11 any animosity to Philip Morris.
12 Q. Okay. Doctor, you, I believe, testified
about some
13 work with acetaldehyde; do you recall that?
14 A. Correct.
15 Q. And it was work that was done by Victor
Denoble; do
16 you recall that?
17 A. That is correct.
18 Q. And Victor Denoble again was not somebody
in your
19 heirarchy at Philip Morris; he was in another
directorate?
20 A. That is correct.
21 Q. And the acetaldehyde, so the jury
understands, is a
22 substance that is naturally in tobacco; is that
right?
23 A. Well, it's naturally in smoke.
Acetaldehyde is a
24 carcinogen. I don't think anybody would put it
in the
25 tobacco. There is tiny amounts may be used in
the alcohol

1986

1 used in the flavoring, but the predominant
amount of 2 acetaldehyde is produced from the decomposition
of the 3 sugar that's in the tobacco. It's not in
tobacco, it's in 4 the decomposition of sugar.
5 Q. It's something that usually arises in
smoke when you 6 burn tobacco?
7 A. It's not natural. But if you hadn't put
the sugar in 8 there, it would be natural, so it is not a
natural 9 consequence of tobacco.
10 Q. Did you take a close look at the work Dr.
DeNoble did 11 with acetaldehyde?
12 A. I read the reports. I was present at the
meeting. 13 Q. The type of work that Dr. DeNoble was
doing with 14 acetaldehyde was rat testing; is that right,
experiments 15 with rats?
16 A. That's correct.
17 Q. Are you aware that the work that Dr.
DeNoble did with 18 acetaldehyde was based on results with four
rats? 19 A. Something like that, yes.
20 Q. So, everything that Dr. DeNoble told you
about this 21 effect of acetaldehyde and nicotine was based on
studies 22 that had been done with four rats; is that
right? 23 A. I don't know that everything, I mean, part
of that 24 study was done with four rats. I recall that --
I don't 25 recall. I think it was repeated. I think there
is more

1987

1 than one test that was performed.
2 Q. Do you think or do you know, sir?
3 A. I don't have the report. My memory isn't
that good. 4 Q. You don't remember?
5 A. I could look at the report again and find
out. 6 Q. In the report that you displayed to the
jury today, 7 that's the report that shows work with eight
rats; is that 8 right?
9 A. I didn't catch the number when I looked at
the 10 report.
11 Q. Now, the report that you displayed to the

jury showed
12 actually that acetaldehyde and nicotine do not
create
13 physiological dependence; is that right?
14 A. I think that's one of the statements.
It's a
15 reinforcing activity.
16 Q. But it did not create physiological
dependence; is
17 that right?
18 A. Acetaldehyde did not create physiological
dependence;
19 that's correct.
20 Q. And that was one of the major findings
that Dr.
21 Denoble made; is that right?
22 A. That's right.
23 Q. Now, sir, you talked about research that
was done by
24 Myron Johnston; do you remember that -- maybe
research is
25 the wrong word. Some reports that were done by
Myron

1988
1 Johnson?
2 A. Yes, Myron Johnson summarized research
data that was
3 available to him.
4 Q. Now, you were not in advertising at Philip
Morris?
5 A. That is correct.
6 Q. Okay, Myron Johnson was not in advertising
at Philip
7 Morris?
8 A. That's my understanding.
9 Q. Myron Johnston was an employee in the R
and D
10 Department at Philip Morris?
11 A. Yes.
12 Q. And he did not work for you; is that
right?
13 A. That is correct.
14 Q. He did not prepare marketing plans for the
company;
15 is that right?
16 A. I don't have any knowledge of that.
17 Q. The Advertising Department at Philip
Morris is the
18 department that's responsible for the creation
of
19 advertising campaigns; is that right?
20 A. I don't know. I mean, the other companies
that I was
21 with, it was outside agencies. So, I'm not sure
how much
22 was done in Philip Morris and how much was done
by
23 advertising agencies that Philip Morris hired.
24 Q. Let me put the question this way. At a
minimum, you
25 know that advertising wasn't handled by the R
and D

1989

1 Department at Philip Morris?
2 A. That is correct.
3 Q. So, it wasn't raised by you or Myron
Johnson; is that
4 right?
5 A. That's right.
6 Q. I just want to show you Plaintiff's
Exhibit 2279,
7 which is one of the documents that you put up.
8 You may recall it based on the kind
of odd
9 cover page; do you see that?
10 A. Yes.
11 Q. Can, I just want to turn you to page one,
and there
12 is a cover memo in there, isn't there from Myron
Johnson to
13 Robert Seligman; do you see that?
14 A. Yes.
15 Q. And in that cover letter Myron Johnson
describes
16 exactly what he was doing in this report; is
that right?
17 A. He describes what he was doing, yes.
18 Q. Okay. And the first paragraph says, for
over 15
19 years, certain demographic and social trends
have been
20 moving in directions favorable to industry
growth.
21 Now, one by one, these powerful
social and
22 demographic factors are turning against us, and
by 1985
23 all will be operating against us; do you see
that?
24 A. I see that.
25 Q. So, what he's doing is a demographic study
of sorts;

1990

1 is that right?
2 A. That's correct.
3 Q. And that was Myron Johnston's training,
correct?
4 A. Well, that's what he was relied on to do,
yes. He
5 was, I don't know if you would call him a
demographer if
6 that's even a proper word. But he wrote reports
on the
7 trends relating to how people used the product
and which
8 brands were gaining acceptance and hypothesized
various
9 reasons for that.
10 Q. Okay. Then on the next page, page 2, he
says: It is
11 inevitable, therefore, that industry sales will
begin to
12 decline within the next few years. Thus, Philip

Morris USA

13 can sustain its past rate of growth only by an
acceleration
14 of the rate of increase in market share.

15 While this news is not good for the
industry, I

16 believe we can use these data and other data I
plan to

17 report on to good advantage in order to
minimize the

18 adverse effect on Philip Morris; do you see
that?

19 A. Yes.

20 Q. Okay. Now, if you go to the next page,
the contents,

21 you'll see attachment A is a description of data
sources;

22 do you see that?

23 A. Yes.

24 Q. Okay. I believe you were looking at table
2. Do you

25 recall, do you remember that in this document
you

1991

1 specifically put that up on the screen and
looked at it?

2 A. I do.

3 Q. Let's turn to page 3. And down there is
table 2; do

4 you see that?

5 A. Yes.

6 Q. And that, as you pointed out, talks about
percent of

7 15 to 18 year olds who were current regular
smokers; do you

8 see that?

9 A. I do.

10 Q. You didn't point out where that
information had come

11 from, I don't believe. Do you see where that
information

12 came from?

13 A. Yes, that's from a -- I don't see it here.

14 Q. It's at the top of the page, sir.

Chilton's Research

15 Services?

16 A. Right.

17 Q. For the National Clearinghouse on Smoking
and Health?

18 A. Yes.

19 Q. So, evidently this is information that
Myron Johnston

20 obtained from Chilton Research Services; is that
correct?

21 A. Yes.

22 Q. Let's go to the next page, and then he
makes a

23 reference to another data source. Do you see
that on the

24 next page under the heading Teenage Smoking
Prevalence

25 to 80?

1992

1 A. What page are you on, I'm sorry?
2 Q. The very next page. It's got the Bates
number ending
3 in 811; do you see that?
4 A. Yes, sir, survey research at the
University of
5 Michigan.
6 Q. That's a very well-respected research
center?
7 A. Yes.
8 Q. And has studied smoking rates for a long
time; is
9 that right?
10 A. That's correct.
11 Q. And then if you turn back to Appendix A,
you see some
12 more on the data sources; is that right?
13 A. That's correct.
14 Q. I should call it a --
15 THE COURT: Let me just ask, are you
disputing
16 that they didn't do their own surveys? Do you
dispute
17 that the cigarette company or Philip Morris
used publicly
18 available data to create the information.
19 MR. LOMBARDI: I'm asking if Philip
Morris --
20 THE COURT: I'm asking the
plaintiff.
21 MR. ADELMAN: No, your Honor.
22 THE COURT: Why don't we move to
some other
23 matter that may be an issue of dispute.
24 BY MR. LOMBARDI:
25 Q. Now, you talked some about biological
research,

1993

1 correct?
2 A. Correct.
3 Q. A large amount of biological research was
done by
4 Philip Morris during your tenure there; is that
right?
5 A. That is right.
6 Q. And your main complaint about biological
research at
7 Philip Morris was that you didn't get to see
enough of it;
8 is that right?
9 A. No, my main complaint is that what I did
see never
10 tested the finished product. And it's very
difficult to
11 know, for example, whether a Merit is safer than
a Marlboro
12 if you never test a Merit against a Marlboro.
13 Q. Let's talk about the kind of biological
research that
14 was done in Philip Morris in Richmond. There

was actually

15 biological research done in Richmond by Philip
Morris?

16 A. That's right.

17 Q. And it was done right there in the
research building

18 were you worked, correct?

19 A. Right.

20 Q. And the type of biological research there
is called

21 research on the cellular level; is that correct?

22 A. Yes, it's usually called in vitro or cell
level

23 research.

24 Q. And that is an important type of testing,
isn't it?

25 A. It is.

1994

1 Q. And what the testing does, you put certain
components

2 in contact with certain types of cells, and you
see whether

3 damage is done, right?

4 A. Not to get in code words again, but see,
you see if

5 it causes mutations and researches in all types
of cells,

6 hamster cells, bacteria, the Ames test, and so
on.

7 Q. And incidentally, the type of testing that
you find

8 more important are that kind of cell testing and
then human

9 experience; is that right?

10 A. Well, no. You have to do the animal
testing too. I

11 mean, they all provide the information that you
need, but

12 yes, human experience is the ultimate arbiter of
whether or

13 not you are making progress.

14 Q. And you are aware that the public health
community,

15 throughout the time you were at Philip Morris,
was saying

16 that the way to determine whether, for instance,
low yield

17 cigarettes are safer is to look at
epidemiological data; is

18 that right?

19 A. Yes, which showed that they didn't help.

20 Q. And epidemiological data is statistical
data on human

21 experience; is that right?

22 A. That's correct.

23 Q. Now, at Philip Morris the research that
was done on

24 cell testing you were able to see; is that
right?

25 A. On components, not on finished products.

1995

1 Q. And that testing, the research was
maintained in
2 files at Philip Morris; is that correct?
3 A. It was, yes.
4 Q. And these files were available; those
tests were
5 available?
6 A. They were, and that's how, for example,
you would
7 find out, for instance, if you removed nitrate
from the RL
8 sheet, if the sheet itself with and without the
nitrate was
9 safer. You still wouldn't know if it was safer
in the
10 final product.
11 Q. Now biological research was done by Philip
Morris at
12 a place called INBIFO?
13 A. That's correct.
14 Q. INBIFO is an acronym for some German
words?
15 A. That's correct.
16 Q. Which stands for Institute of Biological
Research or
17 something like that?
18 A. I've heard of that, yes.
19 Q. You were aware of INBIFO even before you
got to
20 Philip Morris?
21 A. That's right.
22 Q. Before at Lever Brothers you became aware
of that
23 testing facility, biological testing facility.
24 A. It was know around the world, yes.
25 Q. And INBIFO was a testing laboratory in
Europe?

1996

1 A. That's right.
2 Q. INBIFO did biological testing for
companies other
3 than tobacco companies, in the 60's when you
were at Lever
4 Brothers, is that right?
5 A. That's right.
6 Q. And did you know that INBIFO was owned by
a company
7 called TWG?
8 A. I didn't know who the exact owners were.
9 Q. Did you know that INBIFO was owned in the
60's by an
10 American company?
11 MR. ADELMAN: Objection, he's
testifying, your
12 Honor.
13 THE COURT: Overruled.
14 BY MR. LOMBARDI:
15 Q. Did you know that INBIFO in the 1960's
was, on the
16 other hand, owned by an American company?
17 THE COURT: Do you know who owned
it?

owned it. 18 THE WITNESS: No, I don't know who
 doesn't 19 THE COURT: Why don't we move on, he
 20 know.
 21 MR. LOMBARDI: I'm sorry.
 22 THE COURT: He says he doesn't know
 who owned
 23 it.
 24 BY MR. LOMBARDI:
 25 Q. INBIFO did a whole battery of testing for
 Philip
 1997
 1 Morris, isn't that right?
 2 A. That's my understanding, yes.
 3 Q. Your understanding is that INBIFO did in
 vitro
 4 testing, is that right?
 5 A. Yes.
 6 Q. It did in vitro testing?
 7 A. Yes.
 8 Q. It did mouse skin painting?
 9 A. That's in vitro testing.
 10 Q. But mouse skin painting was done at
 INBIFO?
 11 A. Yes.
 12 Q. And animal inhalation studies were done
 there?
 13 A. That's right.
 14 Q. You didn't see the reports that came from
 INBIFO, as
 15 I understand your testimony, is that right?
 16 A. That's right.
 17 Q. Okay. And you wanted to see them, is that
 right?
 18 These reports?
 19 A. We were doing research on the products;
 yes, you want
 20 to see them.
 21 Q. And you never saw them over the whole
 course of your
 22 time at the company, is that right?
 23 A. No, that's not right. I think I saw one
 or two, the
 24 ones that Tom Osdene showed me.
 25 Q. Okay. Now, the fact that you weren't able
 to see
 1998
 1 this, this information, because that was in Dr.
 Osdene's
 2 camp, is that right?
 3 A. That's right.
 4 Q. The fact that you weren't able to see it
 was somewhat
 5 inconvenient, but it's something you felt you
 could work
 6 with during your time at Philip Morris, isn't it
 that
 7 right?
 8 A. Provided the answers are made available to
 you and

9 you have the answers I felt I could work with
what they
10 have.
11 Q. Now you, yourself, never actually went to
INBIFO?
12 A. That is correct.
13 Q. But you met INBIFO scientist who came over
to
14 Richmond, is that right?
15 A. I don't recall that, maybe.
16 Q. You never saw INBIFO's records, is that
right?
17 A. That is correct.
18 Q. Now, you made reference to Dr. Osdene
making comments
19 about destroying some documents from INBIFO. Do
you
20 remember that?
21 A. He took one back for me and said he had to
destroy
22 it; at least that one, yes.
23 Q. Did you ever actually see Dr. Osdene
destroy a
24 document from INBIFO?
25 A. No, not personally watch him do it.

1999
1 Q. You have no knowledge whether, even
assuming Dr.
2 Osdene destroyed a document from INBIFO, whether
that was
3 the only copy of the document, isn't that right?
4 A. I'm not sure I understand the question.
5 Q. Well, you don't know whether INBIFO
maintained full
6 and complete records of all it's reports, is
that right?
7 A. Based on information I had at the time,
limited to
8 1984.
9 Q. That's what you are here to testify about?
10 A. As of 1984 I can't answer that question.
I mean, I
11 didn't know as of that time.
12 Q. Okay, now, Philip Morris also did
biological research
13 at outside laboratories in the United States,
isn't that
14 right?
15 A. Directly?
16 Q. Yes?
17 A. I was under the impression that was done
through at
18 least after the time that I got there, earlier
they did it
19 outside, but I thought it was done either
through CTR or
20 Center for Tobacco Research or the Tobacco
Institute.
21 Q. Okay. Are you familiar with testing done
by labs
22 like the Hazleton Lab, animal inhalation
studies?

23 A. Yes, I am.
24 Q. Those are called contract labs, right?
25 A. Yes.

2000

1 Q. And that means you hire them for a one
time set of
2 tests or several tests and they do work for a
bunch of
3 different companies, is that right?
4 A. That's correct.
5 Q. Now, contract labs frequently have more
expertise in
6 a particular type of testing than does the
client that goes
7 to them, is that right?
8 A. That's correct.
9 Q. And, for instance, a contract lab might
have a
10 specialty in animal inhalation studies, is that
right?
11 A. They could have.
12 Q. And animal inhalation studies do require
some
13 specialization, is that right?
14 A. All animal studies require specialization,
yes.
15 Q. You need a special type of -- you need to
find an
16 animal that you could work with, is that right?
17 A. Well, there are standards for keeping a
lab like the
18 rat studies that Denoble did. You have to set
up an entire
19 lab and it cost money to do that, but we did it
in that
20 case.
21 Q. And you have to get equipment to work with
to
22 actually perform the inhalation tests, is that
right?
23 A. That's correct.
24 Q. And you need people who can specialize in
that, is
25 that right?

2001

1 A. That's right.
2 Q. And when you do that type of work, in fact
you
3 recommend that type of work, don't you, to
companies to go
4 to outside labs to do that type of work?
5 A. I recommend to do it both ways. Typically
when I was
6 at Lever Brothers we would have our own
laboratories and we
7 would run the tests ourselves, and we would have
those
8 confirmed by an independent laboratory so no one
could say
9 only if our laboratory could we get the results
we wanted.

10 Q. It's more credible when you get results
 from an
 11 outside laboratory, is that right?
 12 A. You need to do both because they can make
 a mistake,
 13 too.
 14 Q. And when you go to an outside laboratory
 you are
 15 essentially paying for an objective review, is
 that right?
 16 I'll strike the question.
 17 You have recommended that people go
 to outside
 18 laboratories to do testing, right?
 19 A. Yes; yes, I have.
 20 Q. Okay. Sir, you talked some about some
 work you did,
 21 some projects you did that didn't go to
 conclusion at
 22 Philip Morris; is that right?
 23 A. That's right.
 24 Q. And before we talk specifically about
 those, it's
 25 true, isn't it, sir, that designing a safer
 cigarette is

 2002
 1 not an easy matter?
 2 A. Well, a cigarette is a complicated device.
 There is
 3 about 57 different variables that you have to
 watch out
 4 for. So, in that sense, other than for people
 with a lot
 5 of expertise, it's difficult, yes.
 6 Q. It's a very challenging problem to come up
 with a
 7 cigarette that addresses all the health concerns
 that
 8 people have raised; is that right?
 9 A. That is right.
 10 Q. And there were no perfect solutions to the
 problem?
 11 A. We are not trying to make it safe. There
 is even a
 12 question whether you can do that. The issue is
 safer, not
 13 safest or safe.
 14 Q. And there are tradeoffs whenever you try
 to come up
 15 with a safer cigarette; is that right?
 16 A. There is always tradeoffs in regard of one
 kind of --
 17 like you might have to trade some long term
 effects for
 18 short term effects, or vice versa. That's true
 in any
 19 product of this type.
 20 Q. Okay. And some of the tradeoffs relate to
 trying to
 21 figure out what is the exact bad constituent of
 smoke that
 22 you want to remove; is that right?

23 A. Well, no. I mean, I think we recognized
the ones you
24 want to remove are the most virulent. The
mutagens and
25 carcinogens, a lot of those which have been
identified, I

2003

1 don't think there is any confusion about which
ones we need

2 to remove.

3 Q. For instance, if you try to remove one of
those, then
4 you might inadvertently, or just because of the
complexity
5 of the matter, increase another one; is that
right?

6 A. And that's exactly why you have to test
the final
7 product to make sure you haven't inadvertently
caused a
8 negative change when you try to make a positive
one.

9 Q. So, for instance, you know what a PAH is;
is that
10 right?

11 A. Yes I do.

12 Q. PAH is one of constituents of smoking
pinpointed by
13 the public health community as causing a
problem?

14 A. PAH is a class of polynuclear aromatic
hydrocarbon.

15 So, it's not describing a single compound.

16 Q. Fair enough. But one thing you could do
to try to
17 remove PAH is to add nitrates to the tobacco; is
that

18 right?

19 MR. ADELMAN: Excuse me, your Honor.

I think

20 this is outside the scope of direct.

21 THE COURT: I'm going to sustain the
objection.

22 BY MR. LOMBARDI:

23 Q. Let me turn, sir, to the NOD program,
naturally
24 occurring denitrification, that you referred to
earlier?

25 A. Yes.

2004

1 THE COURT: How much more do you
have?

2 MR. LOMBARDI: I have a ways to go.

3 THE COURT: You are going to have to
pick it

4 up. You are going to have to move it more
directly. If

5 you have specific questions on particular
points, why

6 don't you try to get to them, rather than kind
of

7 generalized discussions about the background.
8 MR. LOMBARDI: I'll do that, your
Honor.
9 Q. You talked about the naturally occurring
10 denitrification?
11 THE COURT: We have already gotten
to that. Go
12 on to your next question.
13 Q. Sir, at Philip Morris when you arrived
there Philip
14 Morris had techniques for removing nitrates from
tobacco?
15 A. That's correct.
16 Q. They had a program called crystallization.
17 MR. ADELMAN: Your Honor.
18 THE COURT: I think it is beyond the
scope.
19 MR. LOMBARDI: He said --
20 THE COURT: I understand your
position. I
21 sustained the objection. It is beyond the
scope. If you
22 want to call him back in your case and explore
it, you
23 can.
24 MR. LOMBARDI: May I continue on to
the NOD
25 program?

2005
1 THE COURT: He spoke to that, but
let's try to
2 stick to things brought up by the plaintiff on
direct.
3 BY MR. LOMBARDI:
4 Q. I will, your Honor. You said that the NOD
program
5 was ready to go in approximately 1980?
6 A. I said Susan Dobberstein's conclusion was
ready,
7 conclusion in 1980, who was commissioned to do
the study,
8 says, as we show, that it was really ready to
go.
9 Q. Isn't it true, sir, that the program
continued after
10 1980 and problems were being addressed along the
way?
11 A. The program continued, and I call that
paralysis by
12 analysis. The question is whether it was good
enough to
13 save lives or whether you need to continue to
study it.
14 Q. There are people at Philip Morris who
believed that
15 more work needed to be done on the program
before it could
16 be put into action; is that right?
17 A. That is correct.
18 Q. And so, for instance, in March of 1982,
the program
19 was still ongoing; is that correct?

20 A. Yes.
21 Q. Okay. I'm going to show you IWP 9610, I
don't know
22 if you can read the date. I'll read it to you,
March 19th,
23 1982; do you see that?
24 A. I do.
25 Q. And you can see on the "re" line it
relates to the

2006

1 NOD project; do you see that?
2 A. Yes.
3 Q. Okay. Let's go to the next page and see
on that page
4 the objective of this memo is to provide an
overview of the
5 status of the NOD project for management review;
do you see
6 that?
7 A. Yes, I do.
8 Q. And you see that it goes, I'm not going to
read
9 through all these conclusions, but you see there
are a
10 bunch of points made about how the project is
progressing?
11 A. I do.
12 Q. So, as of 1982 the project was still
ongoing; is that
13 correct?
14 A. Yes.
15 Q. By April of 1983 the project was still
being worked
16 on by Philip Morris; is that right?
17 A. That is right.
18 Q. Here is another document, see, it's dated
April 22nd,
19 1983?
20 A. Yes.
21 Q. Okay. And I'll just turn you to save time
to the
22 addendum, where it says, "although we are far
from
23 mastering an understanding of the intricacies of
this
24 microbially mediated and denitrification
process, we have,
25 with the help of an ever growing community of

2007

1 collaborators, been able to substantially
improve our
2 results, as far as proceeding in the current
work project
3 in the NOD process.
4 Do you see that?
5 A. And at the time I made the point you don't
have to
6 understand how something works, if it works
well. And it's
7 useful to put it into effect.
8 I would also point out Philip Morris

filed for
you know,
declaration,
has utility
project at the
and
do you
deal with
Morris was

9 a patent subsequent to that '83 or '84 and, as
10 when you file for a patent you make a
11 deposited legal declaration that the process
12 and that it works.
13 Q. And they were still working on the NOD
14 time you left the company; is that correct?
15 A. That is correct.
16 Q. Okay. Phillip Morris spent enormous time
17 resources on the NOD project; is that correct?
18 A. Yes.
19 Q. Now, you also talked about polonium 210;
20 remember that?
21 A. I do.
22 Q. There are actually a few programs that
23 polonium 210 at Philip Morris; isn't that right?
24 A. Well, I remember two.
25 Q. Okay. And it was a good thing that Philip

2008
210 in
right?
use genetic
that it
right?
counsel approach?
the scope
the
details.
really
the nuts
to a degree
move your
intricacies
to get into
it is

1 interested in looking at the removal of polonium
2 your view at the time you were there; is that
3 A. Absolutely.
4 Q. And one of the programs was a program to
5 engineering to try to make the tobacco leaf so
6 wouldn't have polonium 210 stick to it; is that
7 MR. ADELMAN: Your Honor, may
8 THE COURT: What for?
9 MR. ADELMAN: This is again outside
10 of even his testimony, limited as it was, about
11 polonium project. He's getting into the
12 THE COURT: I'm not sure, is it
13 important to the defendant's case to go into
14 and -- you know, there was some testimony, so
15 it's not beyond the scope, but does this really
16 case anywhere to have the jury understand the
17 of how it worked?
18 MR. LOMBARDI: Judge, I'm not going
19 the intricacies of how it worked. I do think

20 important to establish that Philip Morris did
work on this
21 project.
22 THE COURT: I think he testified to
that. If
23 you want to ask that generally. I'm trying to
move this
24 along to a conclusion today before 7:00.
25 MR. LOMBARDI: Yes, your Honor.

2009

1 Q. Polonium 210 actually by 1981 during your
time at
2 Philip Morris had been viewed as not a very, as
at best, a
3 questionable risk factor by the Surgeon General;
is that
4 correct?
5 A. The Surgeon General, but Philip Morris, we
had better
6 information.
7 Q. Okay. Now, up until the time that you
left Philip
8 Morris, up until the time you left Philip
Morris, polonium
9 210 you knew from the literature was not
considered a major
10 problem as far as tobacco was concerned; is that
right?
11 A. No; we considered it a major problem
within Philip
12 Morris up to the time I left.
13 Q. Okay.
14 A. And the literature, we knew more about it
than they
15 did.
16 Q. Okay. And you knew that polonium 210 was
something
17 that had been known about for years and years,
even prior
18 to the time you got to Philip Morris; is that
right?
19 A. I knew that, yes.
20 Q. Sir, you mentioned the nicotine analog
program; do
21 you recall that testimony?
22 A. Yes.
23 Q. That was another good program that Philip
Morris had
24 in place?
25 A. Yes.

2010

1 Q. Okay. It was a program to try and address
certain
2 health effects of smoking?
3 A. Yes, the cardiovascular effects.
4 Q. And it required sophisticated science to
do this?
5 A. Yes.
6 Q. And it required the programs in place for
a number of
7 years?

8 A. Many years.
9 Q. And Philip Morris spent a large amount of
money on
10 the program; is that right?
11 A. That's correct.
12 Q. Now, sir, you talked about some of the
projects that
13 didn't go through. There were lots of projects
that went
14 through that had the effect of making cigarettes
safer; is
15 that correct?
16 A. Not that we can prove.
17 Q. Okay. You can't prove because the
epidemiological
18 evidence isn't in yet; is that right?
19 A. No, the epidemiological evidence is in,
but it didn't
20 make a difference.
21 Q. Sir, at the time you were at Philip Morris
you were
22 working through the hypothesis that it would be
a good idea
23 to lower the tar and nicotine yields of
cigarettes; is that
24 right, is that correct?
25 A. Yes.

2011

1 Q. And one way that you did that, you
personally did
2 work with reconstituted tobacco; is that right?
3 A. People working for me, you mean.
4 Q. Yes?
5 A. People working for me did, yes.
6 Q. And that helped reduce tar and nicotine
levels?
7 A. Yes.
8 Q. Did work with expanded tobacco; is that
right?
9 A. Yes.
10 Q. And that reduced tar and nicotine levels?
11 A. That's correct.
12 Q. And you personally worked on developments
in expanded
13 tobacco; is that right?
14 A. Again, personally as people who have
worked for me.
15 Q. People who worked for you did?
16 A. Yes.
17 Q. Came up with a program called DIET; is
that right?
18 A. Yes; that's right.
19 Q. That was a work in expanded tobacco that
you were
20 proud of?
21 A. That's right.
22 Q. People who worked for you in the physical
research
23 division did work with filters?
24 A. That's correct.
25 Q. Okay. And that helped bring down tar and
nicotine

2012

1 yields; is that right?
2 A. We don't know that for sure.
3 Q. You did work on ventilation, you mentioned
your
4 direct examination; is that right?
5 A. That's correct.
6 Q. And you specifically you did work to
develop a laser
7 method of putting ventilation holes in; is that
right?
8 A. That's correct.
9 Q. And that helped to improve the cigarette;
is that
10 right?
11 A. Yes, made it more consistent, more
uniform.
12 Q. And it helped make ventilation more
effective?
13 A. Yes, and it also saved probably about 60
million
14 dollars a year.
15 Q. And people at Philip Morris under you also
did work
16 with paper porosity; is that correct?
17 A. That's correct.
18 Q. And paper porosity is another way you
brought down
19 tar and nicotine yields; is that right?
20 A. It was primarily for reducing CO, but it
brings down
21 tar and nicotine yields.
22 Q. People at Philip Morris also worked on
what is called
23 non-conventional cigarettes under you; is that
right?
24 MR. ADELMAN: Objection, your Honor,
I think we
25 have far exceeded the bounds now.

2013

1 THE COURT: Sustained.
2 MR. LOMBARDI: Nothing further, your
Honor.
3 MR. ADELMAN: I have no further
questions.
4 Thank you.
5 THE COURT: Thank you. You can step
down. Do
6 you wish to make any interim argument?
7 MR. ADELMAN: Yes.
8 THE COURT: Go ahead, Mr. Adelman.
Again, this
9 is, I caution this is not evidence but an
opportunity to
10 comment on what evidence has been offered.
11 MR. ADELMAN: Ladies and gentlemen,
this
12 witness was the first among those who testified
from the
13 inside, the inside. Dr. Farone worked at
Philip Morris

14 for 8 years. And I hope you listened carefully
to what he
15 said, and he said it several times, but a very
important
16 word, and that was agreement.
17 You are going to consider this
evidence at the
18 end of the case and consider such issues as
conspiracy and
19 other violations. He said that everybody there
a in
20 senior management, everybody there he talked
to, that they
21 understood nicotine was addictive to the
tobacco,
22 injurious to health.
23 Compare what you know already about
that Philip
24 Morris was saying about those issues.
Furthermore, the
25 agreement also is important because he learned
from Osdene

2014
1 and others that there were agreements in place
among all
2 of these defendants to do the critical
biological research
3 overseas because they wanted to hide it if it
turned bad.
4 That's what the exhibit said that we put up
there. There
5 was an agreement not to do whole product
testing in the
6 United States because they wanted to hide it.
7 That, in essence, is what this case
is about.
8 We are fortunate to be able to have this
witness here to
9 tell you about it. But you saw him; you heard
him. He
10 has no malice, no concern for himself. He's
not here
11 promoting any cause. And he's quite fair about
it.
12 He got terminated for
insubordination, so they
13 say. What's the insubordination? You think
about it
14 overnight. You think about it. I suggest to
you all
15 along the way he sees what's going on, he's a
decent,
16 honest scientist. And he says why are you
doing this and
17 hiding documents and burying them and sending
them away.
18 Jury members, that's the insubordination.
Consider that
19 when you consider this case.
20 And finally, you recall the document
that we
21 put up, the handwritten document, Dr. Osdene's

handwritten

22 notes. This gentleman came in and identified
those as Dr.
23 Osdene's and they matched exactly what he heard
from the
24 lips of Dr. Osdene.
25 THE COURT: Thank you.

2015

1 Mr. Lombardi.
2 MR. LOMBARDI: Thank you, your
Honor.
3 Mr. Farone's testimony is most
relevant to the
4 safer cigarette allegations in this case.
William Farone
5 sat on the stand, obviously hostile to Philip
Morris at
6 this point, but sat on the stand and told you
that Philip
7 Morris had a department that was devoted to
safer
8 cigarettes and into researching a safer
cigarette. They
9 had 200 people in that department.
10 They spent a lot of money. He told
you a
11 little bit about the programs. Some of them
failed, but
12 some of them were successful. Ask yourself
this. If
13 there was a conspiracy not do to develop a
safer
14 cigarette, why in the world would Philip Morris
have a
15 department devoted to it, and why would they
spend the
16 money to do it.
17 Counsel said just a moment ago that
the
18 evidence was he left because of something he
saw that was
19 wrong or bad at Philip Morris. That is not
what he told
20 you. He left because he was fired. He wanted
to be at
21 Philip Morris. He wanted to be the Vice
President of
22 Research and Development.
23 And the spin he puts on events that
took place
24 in other departments today, after he's been
fired, is not
25 worthy of much weight. Think about where
William Farone

2016

1 is today. Think about how he left Philip
Morris and think
2 about the money that was spent to develop safer
cigarettes
3 while he was there. Thank you.
4 THE COURT: Do you have anybody

ready, do you
5 have any witnesses?
6 MR. ADELMAN: No.
7 THE COURT: We are going to recess
for the
8 night. At ten 'til 8:00 tomorrow morning, same
9 admonitions apply, right. Don't talk about the
case among
10 yourselves. Don't talk about the case in Latin
with
11 anybody else. Don't form any opinions or
express any.
12 Leave the pads down, and we'll see you tomorrow
morning.
13 (The hearing was adjourned at 5:10
p.m.,
14 Monday, March 1, 1999 until 8:00 a.m. Tuesday,
March 2,
15 1999, at which time the following proceedings
were
16 conducted in open court.)
17 C E R T I F I C A T E
18 I, Richard G. DelMonico, Official
Court Reporter
in and for the United States District Court,
for the
19 Northern District of Ohio, Eastern Division,
do hereby
certify that the foregoing is a true and
correct transcript
20 of the proceedings herein.
21

22 Richard G. DelMonico,
Official Court Reporter

23
24
25